

THE POLAR TIMES

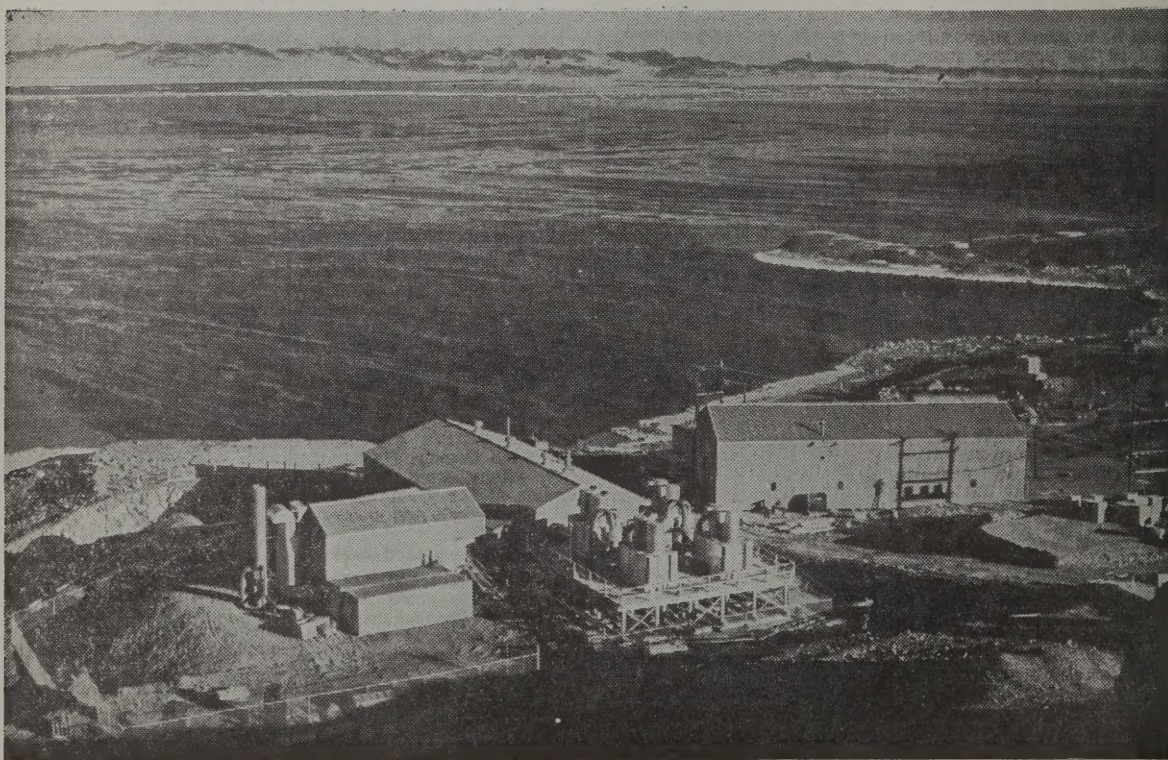


CHANGE OF COMMAND AT SOUTH POLE—Rear Admiral James R. Reedy, left, shakes hands with Rear Admiral David M. Tyree upon completion of ceremony Nov. 26 at the South Pole, during which Reedy assumed command of the U.S. Navy's Operation Deepfreeze, succeeding Tyree as Commander, U.S. Naval Support forces, Antarctica.



The New York Times (by Allyn Baum)

McMurdo Station, Antarctica, foreground, viewed from the base communications shed. The Ross Shelf Ice and the Royal Society mountain range, about 42 miles away, are in the background.



ATOMIC POWER PLANT IN ANTARCTICA: Nuclear reactor at the McMurdo Sound research base is producing electric power. Plant, which replaced a Diesel generator, is first of several planned for Antarctic bases.

The Polar Times

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No. 55.

DECEMBER 1962.

Antarctica's Adm. Tyree Steps Down

By United Press International

McMURDO STATION,

Nov. 24

Soft-speaking, fast moving Rear Adm. David M. Tyree steps down this week after commanding America's Operation Deep Freeze for four years, convinced "there are many things we still need to know" about the frozen Antarctic continent.

Adm. Tyree, 58, with an imposing record of assignments and commands since graduation from Annapolis in 1925, will retire from the Navy later this year or early in 1963 and "settle down somewhat" on his farm near Bethesda, Md. However, he will continue an active role in development of the South Polar regions as U. S. Antarctic projects officer.

In interviews with United Press International aboard planes flying over this coldest, highest and windiest of continents and at his McMurdo Station headquarters, Adm. Tyree admitted he was not sure what future role Antarctica would play.

"So far, through pioneer explorations, the International Geophysical Year work and the continuing Deep Freeze activities, our work has been mostly 'descriptive,' finding out what's here," Adm. Tyree said. "We need to know what further lines should be pursued."

"Actually, we still know little about Antarctica. But man has always been curious—and this curiosity is what leads to advances here. For every one problem the scientists explore, they make findings that pose 10 additional problems. So we must go on from here."

As an example, Adm. Tyree cited the mineral possibilities of the continent.

"So far, more than 100 minerals have been discovered in outcroppings of the various Antarctic mountain ranges," he explained. "But we've explored only about one per cent of the land area. What's under the ice and snow, we don't know."

He admitted the continent's remoteness would make exploitation of known coal deposits

Navy Shifts Command in South Pole Ceremony

Reedy Replaces Tyree as
Head of Antarctic Force

By ALLYN BAUM
The New York Times

SOUTH POLE, Antarctica, Nov. 26 — An unusual change-of-command ceremony took place today as Rear Adm. James R. Reedy relieved Rear Adm. David M. Tyree as commander of the United States Naval support forces in the Antarctic.

Standing at 90 degrees south in minus 34-degree temperature, 85 scientists, Navy personnel and newsmen saw the parka-clad admirals take part in a simple ceremony. They read orders, saluted each other, hoisted their flags and shook hands.

The ceremony was conducted under a cloudless sky. A flat plain of snow stretched as far as the eye could see. An American flag fluttered on a geographic pole and a blue, two-starred admiral's flag waved on a ceremonial staff.

In a farewell statement, Admiral Tyree said:

"Even as we quest into space there is need for man to understand the world in which we live. It is fitting that I turn over command to Admiral

impractical — "the remoteness plus the weather." But he said it was possible "we'll find some rare and exotic mineral that the world just must have . . . then its mining and shipping would be necessary at virtually any cost."

The veteran Naval officer said that the Antarctic, despite hostile climate, had possibilities as a tourist attraction "some day in the future."

"Camera bugs in particular would go wild over our scenery," he smiled. "It's possible a tour ship could follow the supply ships through the channels cut in the ice pack each Antarctic spring. Tourists could live aboard the ship, visiting the mountains and glaciers even South Pole, by plane and helicopter."

About Antarctica being used as a refueling stop by aircraft flying a southern trans-polar route, there were mixed reactions from the admiral.

"Certainly, flying through



U. S. Navy

Rear Adm. David M. Tyree



U. S. Navy

Rear Adm. James R. Reedy

Reedy at the Pole as it is here scientists and Navy men meet and have worked together the past six years in the most difficult environment inhabited by man."

Admiral Reedy, in taking command, said the Navy personnel under his command would make every effort in sup-

port of the scientific effort. What we achieve here today will eventually effect all mankind in the future," he declared.

Also attending the 25-minute ceremony were Dr. Laurence Gould of the National Science Board and the Rev. Theodore M. Hesburgh, president of the University of Notre Dame.

Antarctica Still A Man's World

CHRISTCHURCH, N. Z., Nov. 27 (AP).—Antarctica is going to stay a male stronghold for a while.

"Right now it is strictly a man's world," Rear Adm. David M. Tyree, retiring Commander of Operation Deep Freeze, said today. "Many of the men there, despite their grouching, want it to stay that way, a male stronghold."

Tyree returned from the U. S. base at MacMurdo Sound after transferring his command to Rear Adm. James R. Reedy.

here would cut the air route distance between, say, Argentina and Australia by one-half to two-thirds," he answered. "But with longer range jet

craft and the huge cost of developing an all-weather, year-round airport, I doubt it will come."

He estimated cost of an airfield, to be used even during the long, dark Antarctic night, at "several hundred millions of dollars" if the only known practical site on Rocky Marble Point, 40 miles north of McMurdo, were used.

He said he felt the nations that signed the 1959 Antarctic Treaty, shelving at least temporarily the many conflicting territorial claims on this six-million square mile frozen continent, "intend to respect this document, including exploitation here only for peaceful means."

He doubted rocket launching sites, even for scientific exploration, could be located here for logistics reasons, but forecast considerable use in tracking missiles because of the Antarctic's dust-free air, permitting maximum visibility.

POLAR 'PENINSULA' MAY BE AN ISLAND

Antarctic Trek Finds New Data on Deep Trench That Cuts Across the Region

By HAROLD M. SCHMECK Jr.

The New York Times

What had been supposed to be the world's largest peninsula appears to be an island, according to the first scientific data from a 1,000-mile land exploration in the Antarctic.

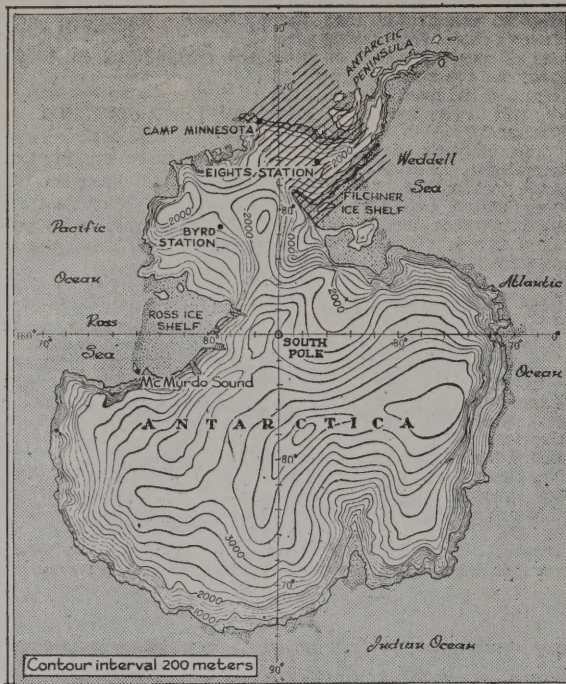
American scientists made the long land traverse last winter. They started on Nov. 30 from a point named Camp Minnesota, near the Bellingshausen Sea coast on Antarctica's Pacific side. They moved inland to loop through the region south of the long Antarctic peninsula and north of the Sentinel Range.

The seven men ended their exploration on Feb. 5 at an inland station called Sky Hi, which was set up last year as a temporary base. They were flown out. This year the Sky Hi location is to be remanned as a permanent research station called Eight's Station.

The expedition was the first to make a land exploration of the area covered, according to Dr. A. P. Crary, chief scientist of the United States Antarctic Research Program.

One purpose was to attempt to trace the course of the deep trench that is believed to extend below sea level from the Ross Sea well toward the region covered.

The new data, added to those from past Antarctic explorations, appear to indicate that the huge trench, coming all the way from the Ross Sea, has a connection to the Filchner Ice Shelf and the Weddell Sea on Antarctica's Atlantic side. The data also indicate that the great



The New York Times

AUG. 27, 1962

ANTARCTIC DISCOVERY: Findings of a traverse party indicate there may be a frozen channel in diagonally shaded area. Thus Antarctic Peninsula may be an island.

Antarctic peninsula and its southern extension form a giant island.

This is not unexpected. Dr. Crary, writing in the September issue of Scientific American, devoted entirely to the Antarctic, said the ice sheet in West Antarctica seems to be underlain by an island archipelago that reaches northward on the map as the Antarctic Peninsula.

A brief report on the traverse of last winter has just been published by John C. Behrendt and Perry E. Parks Jr. of the Geophysical and Polar Research Center of the University of Wisconsin, Madison. Mr. Behrendt was the traverse leader.

The report appeared in the Aug. 24 issue of Science, published weekly by the American Association for the Advancement of Science.

The traverse team covered its icy route in three tracked vehicles called Sno-cats. On the way the scientists took seismic soundings to gauge the depth of bedrock beneath the continent's giant ice sheet. Such data were received at twenty-six places.

"Although data reduction and analysis are just commencing, several significant results are already apparent," the report said.

Extensive mountains were found to exist in areas previously unexplored. Some of the mountains are those shown farther south on existing maps.

A map drawn to tie in the new seismic observations with previous studies shows the

Antarctica Peninsula and its southern extension to be an island separated from the Sentinel Mountains to the south by a deep area below sea level, the report said.

The authors said the depression probably extends south and east to the Filchner Ice Shelf. If the ice were to be removed, they said, the Ross and Weddell Seas would be connected by this channel. Today, of course, no water flows through these channels because the huge South Polar ice cap squeezes down solidly on the continent's bedrock.

The report said the base of the peninsula, shown on existing maps to be about 250 miles wide, may be only half that wide. The peninsula, also called the Palmer Peninsula, is believed to be about 1,200 miles long. It is substantially longer than the Malay Peninsula and the Italian boot.

The report on the traverse came as the United States was making final preparations for a new season of research and exploration during the Antarctic summer. This year's Operation Deep Freeze is expected to get under way on Sept. 15.

Like the comparable expeditions of previous years, the research program is administered by the National Science Foundation. Logistics support is supplied by the Navy.

An important feature of the new season's program, according to an announcement by the foundation, will be a six-man geological exploration in the

Pensacola Mountains, considerably south and east of the Sentinels.

Peaks of the Pensacolas jut through the ice cap on a line running northward from a region about 350 miles from the South Pole. It is one of the last remaining unexplored ranges on earth.

As it did last year, the foundation is supporting a wide-ranging research program centered on the Antarctic. Some seventy-six grants and contracts, totaling \$4,870,124, have been announced. Further grants to be made this fall are expected to increase the total by \$1,370,000.

Under the program, which is now a year-around endeavor, scientists study many aspects of the Antarctic, its surrounding ocean and the abundant life that this water supports.

The Antarctic is a key region for study of weather and many physical and geophysical phenomena that are believed to affect profoundly the planet as a whole.

Unusual Wedding Gift

WHORLTON, England (Canadian Press)—Stella Peel got an unusual wedding present when she married Dennis Ardu, an explorer, recently—she had a mountain named after her. The peak in the Antarctic was named. Stella by a British expedition that discovered it in 1961.

American Polar Society

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AUGUST HOWARD, Editor

THE POLAR TIMES highly recommends "The Polar Record," published by the Scott Polar Research Institute, Cambridge, England.

The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Membership dues are one dollar a year, which entitles members to receive THE POLAR TIMES twice a year.

Back issues are 50 cents each.

Clue to Earth Breakup Lies In Antarctica

By United Press International

WASHINGTON.

Scientists recently have found new support for the once-derided theory that earth's continents are the scattered chunks of a gigantic land mass which broke up hundreds of millions of years ago.

The new evidence includes fossil indications that lush forests once flourished in now-frozen Antarctica. Scientists there have discovered petrified trees and thick beds of hard coal buried under two miles of ice.

This proves that the great southern continent once had a moist, temperate climate. This in turn suggests either that the poles of the earth have wandered or that Antarctica used to be somewhere else in relation to them.

Most scientists find it easier to believe that the continents have moved than to accept the notion that the planet's axis of rotation has shifted enough to explain the drastic climatic changes of ancient times.

George A. Doumani and William E. Long, research associates at the Institute of Polar Studies of Ohio State University, reported Antarctic fossil discoveries in an article published by the Scientific American.

Records of life appear in the Antarctic sediments "as early as anywhere else in the world," they said, and reveal "the same mighty succession of plant life from the first aquatic forms to the immediate ancestors of contemporary forest trees."

Some 250 million years ago in Antarctica, Mr. Doumani and Mr. Long concluded, lush green vegetation grew in a humid, swampy environment such as might exist in a "fast-growing temperate zone rain forest."

A glance at a flat map of the world shows that the various continents resemble pieces of a jigsaw puzzle. South America could be made to fit the west coast of Africa. Antarctica could be fitted to Australia on one side and the bed of the Indian Ocean on the other.

In many parts of the world fossil animals and plants and other biological, geological and geophysical evidence suggest that as far back as 400 million years ago the North Pole was in the middle of the Pacific

4 Planes End Isolation Of 208 in the Antarctic

AUCKLAND, N. Z., Sept. 16 (AP)—Four United States Navy Hercules planes ended six months of winter isolation for 208 scientists and Navy men and in the Antarctic today.

Two of the planes will start bringing parties out tomorrow.

The ski-equipped planes landed at McMurdo Sound after a 2,316-mile flight from Christchurch, N. Z. The flight was 11 days earlier in the season than any made to the continent since American Antarctic operations began six years ago.

In the first Hercules was the commander of the Navy Antarctic support force, Rear Adm. David M. Tyree.

On board the four planes were 119 passengers and 2,200 pounds of mail, including 518 letters for one sailor and 448 for another.

north of the present equator and the South Pole in Southeast Africa.

If the poles and the earth's axis of rotation have remained unchanged, as many scientists believe, the great granite-based continents must have shifted.

It has been speculated that when the jigsaw puzzle pieces broke off the original mother continent, they floated apart in random fashion upon the bosom of the planet's plastic interior.

This theory might explain many things and even lend plausibility to the ancient fable of "lost Atlantis," the great and highly civilized land that reportedly slipped beneath the ocean when the breakup occurred.

Warm Trend In Antarctica

Associated Press

WELLINGTON, New Zealand, Nov. 3.—Rear Adm. David M. Tyree, commander of the U.S. Operation Deep Freeze, recently told the New Zealand-American Society of the comforts now available in Antarctica.

The nuclear power plant at McMurdo Sound is working extremely well, the admiral said, "and you can now have a shower daily instead of about once in 10 days."

And, he went on, the time will come reasonably soon when there will be enough amenities for women at McMurdo Sound.



Scientist Named

Dec. 31

Lawrence M. Gould has been named president-elect of the American Association for the Advancement of Science, to take office Jan. 15, 1964, it was announced yesterday. A prominent geologist and Antarctic expert, Gould recently retired as president of Carleton College in Minnesota and now is professor of geology at the University of Arizona.

Antarctic Base Now Using Power From Atom Reactor

WASHINGTON, July 12 (UPI)—The Martin Company said today that an atomic power plant it had installed in Antarctica was delivering electricity to the United States base at McMurdo Sound.

The company said the plant, which delivers 1,500 kilowatts, was plugged into the base power system on Tuesday, according to a delayed radio message relayed by the Navy.

The prefabricated plant was built for the Atomic Energy Commission. It was shipped to Antarctica in sections last December.

It is the third portable, medium-power atomic station built under commission contract. The first is supplying power to a mountain-top Air Force radar station near Sundance, Wyo. The second is generating electricity for the Army's Camp Century in Greenland.

Icebreaker Off for Antarctic

BOSTON, Sept. 20 (AP)—The Coast Guard icebreaker Eastwind left Boston today on her fifth trip to the Antarctic. She is scheduled to begin clearing a channel at the Hallet Station of the Antarctic on Dec. 13.

A NEW U.S. STATION BEGUN IN ANTARCTIC

The New York Times

CHRISTCHURCH, N. Z., Nov. 2—Nine men aboard a Navy DC-3 flew into Eight's Station today, 850 miles from the South Pole and 1,610 miles from McMurdo Sound, to establish the first new year-round United States scientific station to be built since 1957.

The construction of Eight's Station, named for James Eight, who in 1830 was the first United States scientist to go to Antarctica, is one of the major objectives of the current program. The base will consist of eleven packaged prefabricated buildings. Fourteen air drops by Globemasters will be required to establish and provision Eight's Station.

Located in Ellsworth Land near the base of Palmer Peninsula, the station will be manned by five scientists who will study upper atmosphere physics and six Navy support personnel.

The plane that landed today will remain at the station site to serve as weather and radio post until the basic camp is prepared.

Navy Plane With Scientists Forced Back Over Pacific

The New York Times

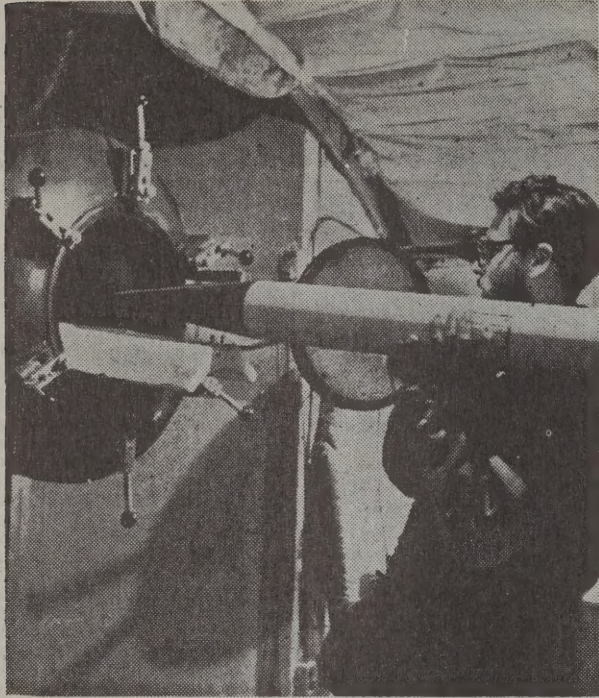
CHRISTCHURCH, New Zealand, Monday, Nov. 5—Engine trouble aboard a Navy R7V super-Constellation over the Pacific Ocean 900 miles south of New Zealand en route to McMurdo Sound in the Antarctic forced the return of the stricken craft to Christchurch. On board were Rear Adm. David M. Tyree, Commander of United States Support Forces, Antarctica, and 50 scientists, newspaper men, Navy personnel and a crew of 13.

The plane was flown by Lieut. Comdr. Robert Ware of Jamestown, R. I. It took off from Christchurch at 9:05 P. M. yesterday, developed engine trouble, and Commander Ware was forced to feather his left outboard engine at 11:55 P. M. He radioed Christchurch for an air sea rescue C54 to rendezvous with the stricken constellation and escort it back to Christchurch.

S. Polar Fuel Drop

Canberra, Australia, Nov. 9 (Reuters)—A U.S. Globemaster aircraft has dropped 36 drums of fuel to an Australian party trekking through Antarctica with tractors, it was announced here today. The six-man party is on a 900-mile journey from Wilkes Base to the Soviet Station at Vostok.

U.S. Rockets Soar Over Antarctica in Air Study



Ralph A. Rotolante loads 77-pound rocket into launcher at camp overlooking Ross Sea Ice Pack. Mr. Rotolante's associates watch rocket flight from two tracking sites.

Three Young Texans Gather Data on the Polar Spring

By ALLYN BAUM

The New York Times

McMURDO SOUND, Antarctica, Nov. 8—A few miles from the base of Observation Hill, three young Texans have built a miniature Cape Canaveral.

Their launching pad is a windowless Jamesway hut—a weatherproof canvas cover stretched across a metal frame—equipped with a closed-breach launcher that resembles a Big Bertha cannon of World War I vintage.

Their rocket is an Arcas—77 pounds, eight feet long and four and one-half inches wide. Propelled by solid fuel, the Arcas can soar from 200,000 to 250,000 feet into the upper atmosphere.

The rocket launchings, under direction of James F. Bettie, 26 years old, are being made to gather information on the sudden warming of the upper atmosphere that occurs during the Antarctic spring.

Mr. Bettie is being assisted by Ralph A. Rotolante and Raymond S. Briggs. All three men are from Texas Western College in El Paso, a division of the University of Texas.

The program calls for a series

Hodges Visits Antarctic With 5 House Members

The New York Times

McMURDO SOUND, Antarctica, Nov. 19—Secretary of Commerce Luther H. Hodges arrived here today from Christchurch, New Zealand, on board a Navy airplane. He is the first Cabinet officer to visit this continent.

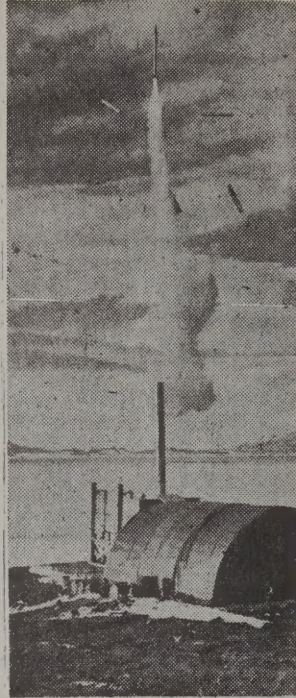
Mr. Hodges was accompanied by Representatives Chet Holifield, Democrat of California; Craig Hosmer, Republican of California; Roy A. Taylor, Democrat of North Carolina; W. R. Poage, Democrat of Texas, and Graham Purcell, Democrat of Texas.

Mr. Hodges, who is scheduled to remain for four days, will tour the nuclear power station here, see the penguin rookeries on Cape Boyd and take a trip to the South Pole.

of 60 rocket launchings at a rate of one a week. The 30th rocket of the series was fired today.

Mr. Bettie said that the group had discovered a South Polar jet stream of 200 knots at an altitude of 90,000 feet. But otherwise, he said, the project has yielded no surprises.

During the winter, temperatures of 80 degrees below zero



The New York Times (by Allyn Baum)

The rocket, which rises to a height of 250,000 feet, leaves the Jamesway hut.

Launcher Like a Big Bertha Fires Devices in Hut

were recorded. As spring approached, with cold and warm layers alternating in the upper atmosphere, the temperatures rose to the relatively warmer minus-50's.

The three-man launching operation assigns one man to prime, load and fire the rocket and the other two to triangulate its flight at tracking stations, one at McMurdo Station and the other 14 miles out on the ice-covered Ross Sea.

The instrument package, which takes between one and two hours to float to earth under a parachute, sends out radio signals and provides information on temperatures and wind velocities in the upper atmosphere.

Mr. Bettie said it took six weeks to correlate the information obtained from the rockets. He said the group was trying to find a way to cut down the processing time before launching a larger, two-stage rocket that can reach an altitude 500,000 feet.

Thus far the launchings have all been successful, carried off with the precise countdown—and the customary weather delays—of that other American launching station so many miles to the north.

AURORAL DISPLAY LINKED TO NOISES

Polar Scientists Find Hiss Coincides With Lights

By ALLYN BAUM

The New York Times

BYRD STATION, Antarctica, Nov. 16—The direct relationship between very low frequency hiss, a noise that travels in the earth's magnetic field and the aurora australis (Southern lights) has been confirmed by two 24-year-old scientists here after six months of research.

Ward Helms of Everett, Wash., a noise specialist, and John Turtle of Newton, Mass., believe that they can confirm the theory of Henry Morozumi, a Stanford University scientist. In 1960 he conceived the idea that a direct correlation between peaks of V.L.F. hiss emissions and peaks of auroral display might exist. Mr. Morozumi will be returning to the Antarctic later this year to take over as scientific leader for the wintering-over party at Byrd.

Working separately but in consultation, Mr. Turtle and Mr. Helms compared the charts they kept daily, and sometimes hourly. Turtle kept charts on aurora peaks that he obtained with an all-sky photometer that records light brightness. Mr. Helms used a VLF emission audio-radio receiver. It was found that the peaks of auroral display and hiss were identical in intensity and coincided repeatedly.

Auroras, it is believed, are caused by high energy solar particles whose trajectories are guided by the earth's magnetic field. Hiss is believed to be caused by the same particles.

As Mr. Helms put it: "I'm not certain that VLF hiss is part of the aurora, per se, but I'm sure that since the aurora and hiss peaks are simultaneous there is reason to think the same particles generating the aurora also generate the hiss."

Next year, the National Science Foundation will emphasize upper atmospheric research in the Antarctic. Plans include the enlarging of the VLF laboratory at Byrd as well as expansion of auroral studies at this station with an increase in scientists wintering over from three to five. In addition, the new Eight's station being built this summer at the base of the Antarctic Peninsula, in Ellsworth Land, will be devoted almost exclusively to upper atmosphere physics.



The New York Times

ANTARCTIC POWER CONTROL: Harold D. Swainford of Salem, Ore., a Navy chief petty officer, on duty at control panel of the nuclear reactor that supplies power to McMurdo Station in Antarctica. Reactor has been out of operation since fire in October.

Antarctic Base Rationing Heat As Its Supply of Fuel Dwindles

By ALLYN BAUM

The New York Times

McMURDO STATION, Antarctica, Nov. 14—The breakdown of a nuclear power reactor and a delay that has now reached two weeks in the arrival of a supply convoy have forced this Antarctic base to cut its consumption of heat and light to a minimum. The commanding officer has ordered that the heat in all quarters be reduced to 60 degrees Fahrenheit. Until further notice there will be no hot water for bathing. No electric lights will be used except when absolutely necessary. Cooking will be held to a minimum, with cold rations providing a large part of the daily menu. All but the most vital electrical circuits have been disconnected. Repair work is going ahead at a feverish pace on the reactor, disabled early last month by a small fire. The supply convoy, with the ice-breakers Glacier, Staten Island and Eastwind leading the way, is seeking to smash through the ice to permit the tanker Chattahoochee and the cargo ship Mirfak to land supplies at this base.

The reactor is on a bluff of rock overlooking the base. It was developed by the Atomic Energy Commission and the Nuclear Division of the Martin Company in Baltimore, Md., and has an output of 1500 kilowatts. The reactor is called a PM-3A, standing for Portable Medium Power Model 3 Field Type. It went into operation on March 4. On July 10, after an initial shakedown, the reactor began supplying McMurdo with electric power.

The fire, on Oct. 7, burned a number of cables, which put the power station out of commission. A hydrogen gas leak in the system was blamed. The power plant was shut down and the base shifted back to standby Diesel power to supply heat and light.

Repairs on the nuclear plant could have been completed in two weeks, but a complete overhaul was instituted in view of the expected arrival of the convoy.

Next year, it is hoped, a desalinisation plant, the first to be powered by nuclear energy, will be put into operation at McMurdo. Sea water from the Ross Sea below the ice shelf will be pumped up to the station and distilled, using waste heat. Water is perhaps the most critical need in the Antarctic.

At present, the more than

200,000 gallons of water consumed a month is obtained by melting snow and ice.

Fuel Going to McMurdo
AUCKLAND, New Zealand, Nov. 20 (AP)—United States helicopters will be used as emergency fuel carriers at the McMurdo Sound station in Antarctica, where oil reserves are critically low. The shortage is due to a fire at the McMurdo nuclear power plant. Operations officers say the helicopters will fly 450 drums of fuel from a storage area established several years ago at Marble Point, 45 miles from McMurdo.

Polar Climbing Taught By ALLYN BAUM

The New York Times

SCOTT BASE, Pram Point, Antarctica, Nov. 10—Six New Zealanders are winding up five weeks of instruction to American scientists and naval teams on mountain climbing, rescue work and cold-weather survival skills.

The instructors, provided by the Federated Mountain Clubs of New Zealand, are volunteers. They were recruited at the request of the United States Antarctic Research Program, through the Antarctic division of the New Zealand Department of Scientific and Industrial Research.

It was agreed that the 40 Americans going into the field should become better acquainted with problems of terrain while engaged in scientific research.

ANTARCTIC PARLEY PLANS JOINT STUDY

The New York Times

BUENOS AIRES, July 30—The second Antarctic treaty conference closed at the weekend here with most subjects left undeveloped.

The twelve treaty signatory nations debated for eleven days in closed meetings. They drafted ten resolutions that were passed unanimously. Six of the resolutions—which have to be approved by each Government—dealt with the exchange of information. Three others arranged for cooperation in such projects as scientific exhibitions and studies to be made during the International Year of quiet sun in 1964 and 1965.

Generally, the conference tended to reaffirm past agreements and appeared to aim at maintaining cooperation of the nations carrying out scientific research in Antarctica.

The president of the Belgian delegation, Ambassador Alfred Van der Essen, said:

"We didn't have enough time to deal with all matters fully. But we brushed over major questions so we can return home satisfied and certain that the Antarctic spirit of unity is still growing."

The British Ambassador, Sir George H. Middleton, said:

"Certainly it is not a reflection on the Argentine Government that more concrete results were not achieved. Even so, there has been an extremely interesting exchange of views."

New Zealanders are expert in climbing techniques on ice and snow.

The instructor team is led by Lieut. L. D. Bridge of the Royal Army, former Scott Base leader. He is also former president of the Federated Mountain Clubs. The others are M. A. Nolan, P. C. Gardner, D. Ball, W. Kroll and N. Hardy.

These men have had climbing experience around the world, including the Himalayas, the Andes, the European Alps and the mountains of Antarctica.

The course included crevasse-crossing, rope-climbing and handling the piton, an iron peg for attaching a rope.

Each course lasted a full morning or afternoon. The classroom was the high bluffs overlooking the Ross Ice Shelf, about a mile from the New Zealand Antarctic Research Headquarters here.

A special snow-traverse course was taught to a five-man team from the University of Wisconsin. The team will be studying the flow mechanics of glaciers on Roosevelt Island in the Ross Sea 350 miles east of McMurdo 350 miles east of McMurdo Station. The five are Manfred Hochstein, Edgard Doss, Lee Kreiling, Donald L. Tranter and Raymond Koski.

BYRD BASE READY TO SURFACE AGAIN

Long, Dark Winter Ending
at U.S. Antarctic Station

By ALLYN BAUM

The New York Times

BYRD STATION, Antarctica, Nov. 16—During the dark Antarctic winter this United States scientific outpost is like a snowbound submarine.

But when winter comes to New York, summer and the sun come to the Antarctic—and Byrd Station surfaces. Men climb out of their tunnels, visitors drop in, relief personnel arrive and preparations are made to submerge next winter.

Here, 600 miles north of the South Pole, 36 men—scientists from the National Science Foundation and Navy support personnel—live through the Antarctic winter in cavernous tunnels 30 feet beneath the snowcap.

One tunnel is 1,600 feet long and 28 feet wide. The snow walls, once gleaming white, are now gray. Hoarfrost hangs from the high steel arches that have been installed flush with the snowcap to protect the station from snow that would otherwise accumulate and crush it.

There are five tunnels. Three are used to stock fuel, food and equipment. In the other two, 15 prefabricated, off-white, wooden, windowless huts, each with double refrigerator doors to keep in the heat, stand on stilts like so many overgrown packing cases awaiting shipment.

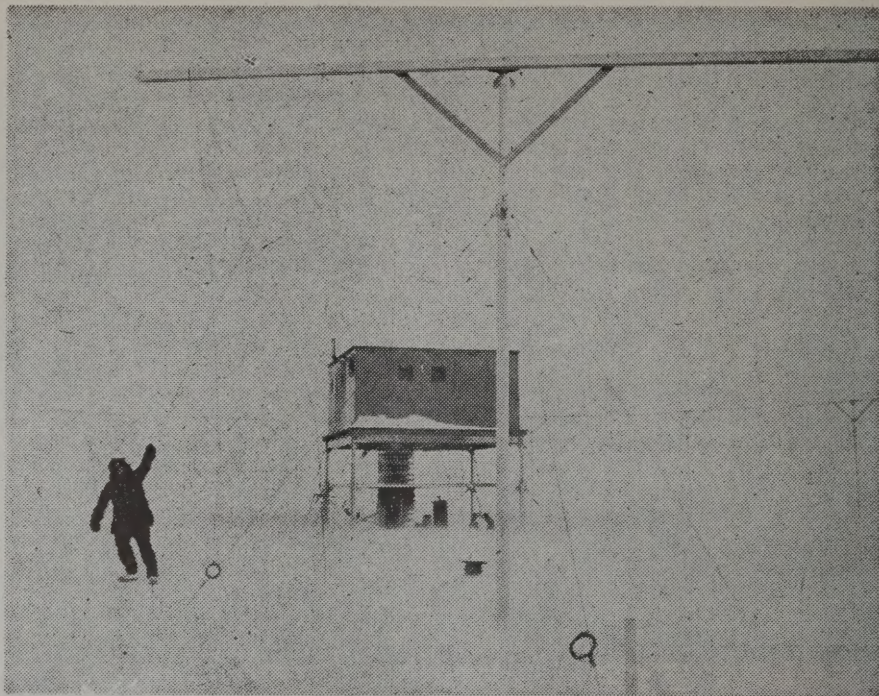
These buildings contain the station's sleeping quarters, mess hall, power station, communications shack, workshops, garage, post office, dispensary and laboratories.

Tunnel temperatures are kept around zero to keep the snow walls from melting. The huts are on stilts so that circulating cold air will prevent melting of the snow beneath them.

Through the winter, neither the scientists nor the support personnel "go topside" except for the most urgent reasons such as gathering snow for water or repairing equipment. Last winter, temperatures of 79 degrees below zero with winds of 60 knots were recorded at Byrd, which is 5,000 feet above sea level on 8,500 feet of ice.

During the long winter, work is steady and routine. It is never a drudge, rarely and hardly a bore, but there is nowhere to go, nowhere to relax. There is a tiny gym, however, converted from a cupboard, and a punching bag has been installed for the men to let off steam.

Contact with the outside world is maintained through



Ronald Sefton of Spokane, Wash., fights the wind as he attempts to repair ground antenna at radio noise station he maintains. In winter, men go outside only on emergencies.

"ham" radio. The men are often able to speak with their families and friends by phone calls arranged by local ham operators.

Otherwise, for six months, monotony is broken only by fish day at mess on Friday, the weekly Saturday night party and the Sunday movie matinee.

Byrd is only 850 miles from McMurdo Station, the United States' main Antarctic installation. But the International Date Line runs between the two bases, and time zones are narrow here. So when it is, say, noon Tuesday at McMurdo, it is 4 P.M. Monday at Byrd.

Three times exist at Byrd: local time, McMurdo time, and "Zulu" or Greenwich Mean Time, which is used by scientists throughout the world as their standard to coordinate research.

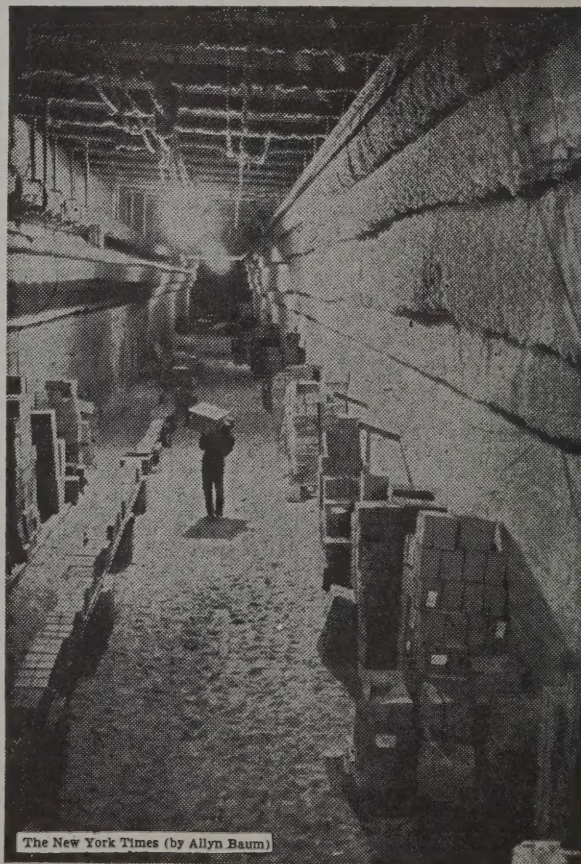
Skindivers Forget Gear On Mission to Antarctic

SOUTHAMPTON, England (AP)—British skindivers forgot something important when they recently sailed in the Royal Research Ship Shackleton for the first Antarctic undersea explorations.

Arrangements were made for the aqualung suits they left behind to follow in the next ship out.

Ice Breakers Use Weight

Modern icebreakers clear a channel by sliding over the edge of the ice and crushing it down by sheer weight.



The New York Times (by Allyn Baum)

Caches of supplies line one of the five cavernous tunnels at the station, 30 feet beneath snow. Huts inside tunnels contain housing, shops and laboratories for the personnel.

A SNOW COLLECTOR BUSY IN ANTARCTIC

Australian Is Attempting to
Measure the Ice Cap

By ALLYN BAUM

The New York Times

BYRD STATION, Antarctica, Nov. 16 — Collecting snow in the Antarctic may seem pointless, but to Robert Dingle, University of Melbourne meteorologist, every flake caught is a dot of data for his computer.

Mr. Dingle is seeking to determine whether the Antarctic's 7,000,000 - cubic - mile ice cap is increasing or decreasing.

Contrary to a general view that the continent is growing, Mr. Dingle believes his studies will show that much snow and ice is blown away, evaporating, lost as icebergs and melting into the ocean.

"Though it can't be proven yet," Mr. Dingle says, "I believe it's possible the Antarctic is slowly losing its ice cap and imperceptibly warming up."

"It is a remote, very remote possibility indeed, that in many millions of years from now the Antarctic will once again be a temperate place. But of what will happen to the rest of the world and its oceans, should that happen, is hard to imagine."

Mr. Dingle uses home-made, rocket-shaped snow traps. These devices have fins at the back to direct them into the wind; a snow-collecting balloon-shaped body and a nozzle-like nose tapering to a quarter-inch opening.

The rockets are mounted on an antenna when a strong wind begins to blow.

More than 127 snow - collection runs have been made here since mid-March, when Mr. Dingle began his experiments. Each lasts a minimum of three hours; one continued for 37.

When the snow collector fills, Mr. Dingle removes it from the antenna and takes it to an underground room. He examines the snow to see whether it is wind-blown or precipitated.

Then he weighs it and notes its consistency, as well as the speed and direction of the wind. He converts the notes later for computing cards and projections.

In the last series of tests, at the Australian Antarctic Research Station at Mawson on the east Antarctic coast, 39,000,000 tons of horizontally driven snow blew across a mile front in a year.

Mr. Dingle's findings at Byrd will be available in figures in April.



The New York Times (by Allyn Baum)

COLLECTING WHAT THERE'S PLENTY OF: Robert Dingle, a meteorologist from the University of Melbourne in Australia, emerges from his underground shack in Antarctica with his homemade "rocket" snow gatherers, used in studying whether ice cap is increasing or decreasing.

Ski Plane and Copter Crashes Mar Holiday in the Antarctic

By ALLYN BAUM

The New York Times

McMURDO STATION, Antarctica, Nov. 22 — Thanksgiving Day spirits were dampened today in the American stations on this continent when two Navy aircraft crashed this morning.

One was a helicopter accident in Wright Dry Valley 40 miles east of this station; the other was a ski-equipped aircraft crash in the Sentinel Mountains 1,350 miles east of here.

The helicopter pilot, Lieut. Comdr. Richard H. Spencer of Hayward, Calif., suffered cuts and bruises. Petty Officer 3d Class John Buckman 3d of Lexington, Ga., who was unhurt, pulled the pilot from the disintegrating craft.

Dr. Florenzo Ugolini, the leader of a two-man field party in Dry Valley that included Bela Csejty, described the helicopter crash.

"The plane looks as though it was suddenly struck by anti-aircraft fire," he said. "It simply flew apart, with rotors, blades, panels flying in all directions directly over our campsite."

In the Sentinel Mountains accident, the ski plane piloted by Lieut. Comdr. John Douglas of Quonset Point, R. I., crashed

on landing when the ski device collapsed.

No one was injured in the landing, although the plane probably is a total loss. The men have warm clothing, tents and a week's supply of food.

The downed men are the pilot, Lieut. Comdr. John Douglas, of Quonset Point, R. I.; the copilot, Lieut. Owen Lovejoy, of Winterhaven, Fla., and a crewman Sgt. Thomas S. Underwood Jr. of Boston. The others are Gerald Weeks Jr. of Des Moines, Iowa; Earl D. Gordiner of Yakima, Wash.; James Hurst of Gulfbreeze, Fla., and Dr. J. Campbell Croddock of St. Paul, leader of scientists, the University of Minnesota Geology Field Party.

The plane was making a supply run from the Minnesota group's base camp, between the Sentinels and unexplored Heritage Mountains, to the Sentinel Mountains, where the geologists had planned to set up a camp for studies.

Meanwhile at McMurdo Sound, Navy officers decided yesterday to recall three Globemasters previously returned to Christchurch, N. Z.

Despite the growing fuel shortage here, the planes will

drop 800 drums of fuel oil from this station's stocks to the newly developed Eights Station 1,400 miles from here. Only 2,300 barrels of fuel oil, each containing 55 gallons, remain in stock here. This is a 23-day supply.

Helicopters are now shuttling between here and Marble Point, an old fuel cache 40 miles away, bringing in 450 drums of fuel to supplement McMurdo's supply.

Meanwhile, the icebreaker Glacier, with the oiler Chatahoochee, the supply ship Mirfak and the icebreakers Eastwind and Staten Island are 30 miles away. They are making between five and six miles a day in ice four to five feet thick.

Everything is being done here to conserve fuel. Heat, electricity and heavy laundering have been reduced owing to the failure of the nuclear power plant.

With the withdrawal of 800 drums of fuel for Eights Station, it is considered possible that all heat will be cut off after Dec. 1 and that restrictions on water will be imposed unless the base is resupplied in the next 10 days.

Seven Rescued From Ice

The New York Times

MC MURDO STATION, Antarctica, Nov. 24 — Seven men were rescued today after having spent 60 hours on the Sentinel range ice, 1,350 miles east of this station in Marie Byrd Land. The men, part of the University of Minnesota Geology Field Party, crash-landed Thursday. They are being flown to Byrd Station, 850 miles east of here. Nobody was injured.

Nov. 26 — Five crewmen and members of a party from New Zealand were rescued after their plane, a twin-winged, ski-equipped Dakota, had crashed on Davis Glacier, 125 miles north of McMurdo Station.

No one was injured in the most recent crash, which occurred when the Dakota lost an engine.

Museum Gets Polar Relic

QUONSET POINT, R. I., Aug. 4 (AP)—A 50-year-old package of canned food from the ill-fated South Pole expedition of Robert F. Scott was presented to the Mariners Museum at Newport News, Va., today by Air Development Squadron 6, the Navy's Antarctic air unit. The food tins were taken from Scott's hut near McMurdo Sound. The hut was found by the Navy in 1956, when McMurdo Station was established.

Antarctic Water Full of Life

An acre of Antarctic sea water probably contains more animal and plant food than any other acre of water or land in the world.



The New York Times (by Allyn Baum)

THE BELLE OF ANTARCTICA: "Emily Glutz," a mannequin whose charms radiate throughout the Chief Petty Officers' Mess, is the pride of the men at McMurdo Station.

Antarctic Jottings

U.S. Humor Transplanted to Continent, Even Wry Joke About Trading Stamps

By **ALLYN BAUM**

The New York Times

McMURDO SOUND, Antarctica.

Following are jottings from a correspondent's notebook about the sights and sounds of this continent:

The first thing a visitor sees as he alights from his plane at Williams Field, an airstrip scraped from pack ice four miles from McMurdo Station, is a tow truck with a green radiator on which is written, "We give S. & H. Green Stamps."

The McMurdo Post Office is Branch 17038 of the New York City Post Office. All cancellations from McMurdo to the world bear the stamp "New York, N. Y.," although the office is 12,400 miles from the mother office at 33rd Street and Elghth Avenue.

Newcomers to the Antarctic summer suffer from an affliction known to oldtimers as the Big Eye. The symptoms are a staring, glazed look accented by

voluminous bags under the eyes, the result of attempting to get accustomed to 24 hours of daylight during the six-month summer.

The most popular dessert at all Antarctic stations among scientists and support personnel is ice cream. Another popular delicacy is iced bear claws, a form of rich Danish pastry with two slashes in the dough and richly coated with sugar icing.

On the Suggestions to the Recreation Committee box in the McMurdo Mess Hall is written one simple word—"Women."

Standing beside the guest book of the biological laboratory of the National Science Foundation at McMurdo is the only growing greenery in the Antarctic, a rubber tree that has wintered over for two years, and is still thriving.

Pole, Byrd and McMurdo Stations are probably the only

naval installations in the world where the United States flag flies 24 hours a day. Because the sun at the Pole does not set for more than six months of the year there are only two raisings and lowerings of the flag annually.

At Byrd Station, where scientists and support personnel live in snow tunnels 30 feet under the snow, two scientists passed one another and courteously bowing said, "Good night, or is it good morning. Well, whatever it is, sleep well." Neither had been above ground in 10 days.

Only two women have wintered over in the Antarctic. They were Mrs. Edith Ronne, wife of the famous explorer, and Mrs. Jennie Darlington. Both women accompanied their husbands on an expedition in 1948.

Writing of women, there are three mannequins in this vast continent to keep the men company. There is Emily Glutz, pride of the Chief Petty Officers' Wardroom at McMurdo. She was kidnapped by helicopter from the Coast Guard icebreaker Eastwind last February and now stands scantily clad and brightly lighted in a corner of the recreation room. Then there is Margaret, at South Pole Station, a blonde with a flaming red dress, and Miss Gallagher at the New Zealand Station at

Scott Base. Miss Gallagher's name comes from the name stenciled on the Royal Navy duffel coat with which she is attired. Miss Gallagher, by the way, was returned to Wellington, N. Z., last week for a new permanent. She will be returned to Scott Base before the end of the summer.

A poster at the United States Research Program headquarters at McMurdo shows a blue ice cap with penguins colored in black and green in the foreground and a parachuting scientist in the back and reads, "Come to Restful, Offbeat McMurdo Sound." The poster was printed in California.

Plastic Christmas trees may be drawn by enlisted naval personnel from the Navy Supply Depot during the holiday season. The trees, however, must be returned by Jan. 5, 1963.

Although "country-style music" and the dulcet tones of Pat Boone and Frank Sinatra are favored among the support staff of the Antarctic, scientists work among their fish specimens in the McMurdo biological laboratories to the strains of Bach's, English Suites Nos. 1 through 6.

Although surrounded by 7,000,000 cubic miles of snow and ice, water remains the most precious commodity, next to fuel, in the Antarctic. The cost-a-gallon of water at Mc Murdo has been unofficially computed at \$1.25; costs at the distant Byrd and Pole Stations are higher because the fuel needed to melt the snow to water has to be air-dropped or flown in.

The most popular decorations at all American Antarctic stations are plastic flowers. They are used on tables to decorate enlisted and officers' messes, wardrooms and barracks. After endless days of white ice and snow, the men crave the relief of floral color, even if it isn't authentic.

On the back of a door at one of the science buildings in the tunnel at Byrd the pin-up is Picasso's "Des Femelles d'Avignon."

One of the many incongruities facing the unknowing and unsuspecting visitor to the Antarctic is the brass ring of the telephone. Amid the bitter cold, slashing winds and the thousands of miles of ice, snow and tossing seas one realizes that civilization has followed the scientist and the services with a vengeance. At McMurdo the telephone system is dial. Byrd Station, not to be outdone, has three phone systems, one between the tunnels and above-ground installations, another between the buildings in the

tunnels and a third between the tunnel buildings and science laboratories located underground, but a distance from the main base. South Pole Station, however, is so small that no telephone system is needed. All a man need do is yell; he will be heard.

Anyone who thinks the Antarctic a quiet place is in for a shock. Night and day, around all United States stations, the steady clanking of tractor treads can be heard as they crunch through the snow to the accompaniment of the angry buzzing of their diesel engines. Overhead the high whine of turbo-prop planes and the throb of piston engines jolt the air, making the icy wastes of this 5,100,000-square-mile continent as noisy as Fifth Avenue in a Christmas traffic tie up.

True to the American tradition that a sign must dot every building, Antarctica proves no exception. Almost every billet and building stands marked with a notice. The most cryptic, however, is one at McMurdo that reads, "Harold's Place." No one knows who, if anyone, Harold is.

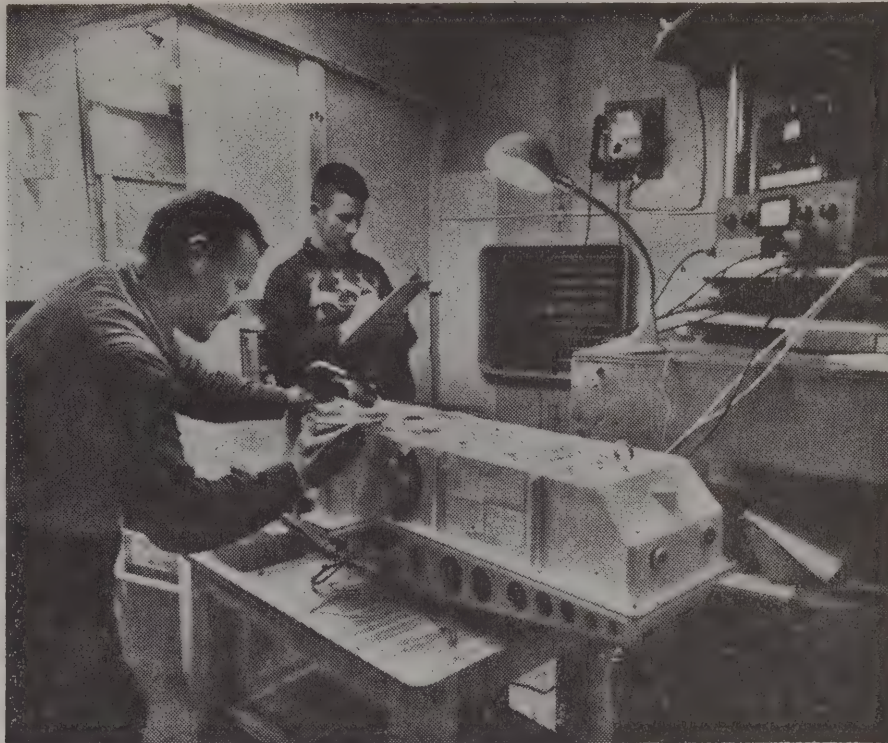
As two men passed one another in the street of McMurdo the other day, one comparatively clean-shaven type stared at the other, a heavy-bearded fellow. "Is that you, Chuck?" asked the clean-shaven man, "Heavens, I haven't seen you in the past nine months, where you been, South?" Indeed, the heavy-bearded one had. He'd just returned from wintering over at South Pole Station.

At Byrd Station a notice reads, "No swimming in the Snow Melter." It is signed, "Yeti, the Abominable Snowman."

In the science-to-the-rescue division, the men at Scott Base, the New Zealand Antarctic Research Headquarters, two miles from McMurdo, ran out of beer. Their scientists were consulted and a home-brew fermenting gadget was installed in a used Royal Navy rum barrel. Ingredients for the beer were yeast for making bread and malt (no one knows what THAT came from). Owing to the extremely heavy flavor of rum that permeated the first brew of beer, however, fermentation now takes place in chemical retorts set at different heights in the science laboratories to take advantage of the heat in the buildings.

Penguin Foodless for 40 Days

The male Adélie penguin of the Antarctic is able to go without food for as long as 40 days in his sub-zero environment.



STUDYING ANTARCTIC'S OZONE: Russell Thompson, left, and Richard Coleman, calibrate spectrophotometer in aurora observation tower at Byrd Station. Machine, one of 90 in existence, is used to study connection between ozone and auroral activity.

OZONE IS STUDIED IN THE ANTARCTIC

Depth of Layer May Have Link to Auroral Displays

By ALLYN BAUM

The New York Times

BYRD STATION, Antarctica, Nov. 16—Observations of the ozone layer through the winter at this station, if calculations prove correct, point to a theory that the ozone layer covering the earth is thicker in polar regions than in temperate zones and may, in turn, be the cause in producing greater auroral activity in these areas.

Richard Coleman, 23 years old, a meteorologist and physicist from Pineville, La., is conducting the studies. He said that in the coming year at Byrd, research will be continued in an effort to correlate the Antarctic ozone intensity with that of auroral activity.

During the last five years of ozone studies made in the Antarctic, a definite gain in the amount of ozone in the layers has been noted during the summer. This is not wholly dissipated when the long night of winter comes to the continent.

The ozone layer studies were

conducted on a Dobson Ozone Spectrophotometer, of which there are only 90 in the world. This machine measures the amount of ozone in the ozone layer, which lies between 30,000 and 100,000 feet.

This layer acts as a filter, cutting down the ultraviolet light striking the earth by 90 per cent, preventing the blinding of mankind and the overheating of the earth's surface.

Indeed, were the ozone layer removed from our atmosphere, the surface of the earth would heat, causing a permanent cloud cover, which in turn would lead to the cooling of the earth's inner atmosphere and another ice age. Studies being conducted around the world on the ozone layer are leading to an understanding of the causes of our ice age.

South Pole Grid Effort Brought Seabee Victory

By the Associated Press

Washington

Football is now being played at the South Pole, the Navy reports.

A delayed dispatch from the Navy's "Operation Deep Freeze" in Antarctica reported that on Thanksgiving Day a team of Seabees defeated a team of American polar sci-

tists, 6-0, in a game played in the frigid atmosphere of the South Pole station, some two miles above sea level.

"A temperature of minus 33 degrees fahrenheit, a bitter wind, and the rarefied atmosphere of the 10,000-foot high polar plateau," said the dispatch, "made playing conditions somewhat less than ideal in comparison with the traditional weather for football's turkey day classics."

Lacking a regular football, the men played with a basketball—found in the recesses of the station's underground spaces.

The Seabees—members of United States Naval Mobile Construction Battalion 8—are a part of the Navy's Antarctic Task Force 43 which gives logistical support to a broad scientific research program sponsored by the National Science Foundation.

The game was the idea of Victor J. "Moose" Marino, a 200-pound Seabee from Pittsburgh.

Jerry Dudley, a construction electrician from Fayetteville, Ark., scored the lone touchdown, which came in the fourth period of the game.

The struggle lasted an hour and a half, and the players—each wearing some 40 pounds of antifreeze clothing, including heavy boots—were "preserved from exhaustion by—long huddles."

GEOLOGISTS STUDY ANTARCTIC PEAKS

10-Man Team Opens Base
in the Heritage Range

By ALLYN BAUM

The New York Times

THE HERITAGE RANGE, Marie Byrd Land, Antarctica, Nov. 17 — A 10-man team of geologists and graduate students was here today to begin a study of this heretofore unexplored mountain range.

They believe the Heritage Range to be an extension of the Sentinel Range to the north. Both ranges are part of the Ellsworth Mountains and are among the highest, most rugged and most isolated mountains of Antarctica.

Studies in the last two years have indicated that the Sentinels are similar to the Andes, and they may prove the whole Ellsworth group to be an extension of the Andean chain.

The leader of the geological group is Dr. J. Campbell Craddock of the University of Minnesota, who headed an advance party that arrived here yesterday after selecting a base site. With him were Gerald Webers and Donald Sohlt and the crew of a Navy ski-equipped airplane that flew them here from Byrd Station, 400 miles to the east.

Immediately after landing, Dr. Craddock and his two aides pitched two pink pup tents beside the aircraft, whose crew began broadcasting their position and sending weather reports.

Two other Navy aircraft from McMurdo Station, 1,450 miles away, brought in the rest of the geology field party. They were Peter J. Barrett, Benjamin Drake, Glenn Bowie, Jerry D. Dolence and Harvey J. Meyer, and two geologists from the United States Geological Survey, Rob M. Collier and Dean T. Edson. These planes also brought in 34,000 pounds of food and equipment.

The company expects to be here until next Feb. 10 and will probably receive more supplies in an airdrop next month.

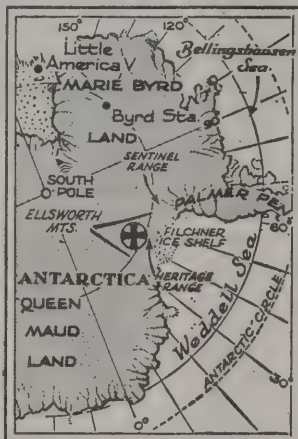
After the planes were unloaded, the geologists began assembling two huts that will serve as a "permanent" base for the explorations this summer and, it is hoped, next summer.

The studies include mapping bedrock formations, measuring and describing selected rock strata, collecting geological specimens for laboratory analysis, seeking fossils and making observations of the weathering, land-form development and geological history of the icecap



The New York Times (by Allyn Baum)

Ten-man group of geologists unload plane in valley backed by rugged Heritage Mountains



The New York Times

NEW MOUNTAINS: University of Minnesota scientists are studying the previously unexplored Heritage Range (cross).

and the rock surfaces beneath it.

The studies are being aided by the National Science Foundation and are supported by the Navy through the VX-6 Air Development Squadron, which operates in the Antarctic.

Polar Trip Medals Gain

WASHINGTON, Aug. 6 (AP)—The House today authorized medals, more than thirty-six years later, for forty-one men who helped the late Admiral Richard E. Byrd make the first flight over the North Pole. The measure sent to the Senate would instruct the Secretary of the Navy to present the medals to the men or their survivors even though the polar expedition of May, 1926, was privately sponsored.

Antarctic Helicopters Seen Peril to Penguins

The Manchester Guardian

WELLINGTON, New Zealand—The stream of visitors to the Antarctic has increased to such an extent that the most southern Adelie penguin colony—at Cape Royds in McMurdo Sound—is in danger of extinction.

A zoologist at the University of Canterbury in England, who just returned from a second study-visit to the penguin colony, said he was anxious about the decrease in numbers of the penguins.

The little colony is on the doorstep of a hut built by Shackleton's expedition, and because the hut and its contents are one of the sights of Antarctica the area has many visitors.

"Sometimes there are four or five parties arriving by helicopter from the American base each day," the zoologist said. "That means up to 25 visitors. Most of them do not harm the birds. But the penguins are frightened by the helicopters. They scatter and spill the eggs out of the nests. Then the skua gulls swoop on them."

"We certainly don't want to stop people visiting the penguins. It is one of the few points of enjoyment in the Antarctic, and any protective measures necessary could be achieved by reducing the fre-

quency of visits or by making sure the helicopters land only at a distance."

For a 50-year period until 1954 the size of the colony remained fairly constant at about 2000 nests, but has since diminished to barely half that number.

NORWAY RESTRICTING 1963 WHALING FLEET

Norwegian whaling companies will send four expeditions to the Antarctic in 1962-63, compared with seven last season, according to News of Norway, an official publication.

The decision was made despite the large quantity of unsold whale oil — about 29,000 tons — and poor prospects for profitable operations.

The four factory vessels, are registered at Sandefjord, the main port in the province of Vestfold.

Of the 4,557 Norwegians who took part in Antarctic whaling during 1961-62, 2,850 came from Vestfold. Next season, the number from Vestfold will be cut to about 2,200.

The cutback will be felt in the traditional whaling districts which have derived a considerable part of their income from the Antarctic operations.

A Garden Grows Under the Ice at South Pole

2 at Antarctic Base Cultivate Tiny Plot in Their Workroom

By ALLYN BAUM

The New York Times

SOUTH POLE STATION, Antarctica, Nov. 20—Twenty feet under the polar icecap and a mere 800 yards from the South Pole, two scientists are growing marigolds in a crowded workroom.

The scientists are Michael Phelan of St. Louis, a specialist in earth phenomena, and William Aitken of Worcester, Mass., an air-glow specialist.

Their garden, a plot of vermiculite, a mineral, grows under the constant glow of fluorescent lamps and large tungsten bulb. The plot is about three feet by a foot and a half. Within this small space grow orange and yellow dwarf marigolds, carrots, *Calendula* and "some kind of ivy."

"Earlier this year we had some parsley," Mr. Phelan said, "but it looked so good we harvested it, chopped it up and garnished our soup with it one evening."

"We also had some onion," Mr. Aitken said, "but it didn't have a chance. The guys here used to come by, look in longingly, then walk up and crush the tops of the onion sprouts between their fingers and smell the fresh onion. It was like home. An earthy green smell—you know what I mean?"

The whole garden-growing experiment began when Mr. Phelan and Mr. Aitken found a pack of mixed seeds someone had brought to the Pole a couple of seasons ago and just forgot about.

"Mike and I decided to see what would happen if we put the seeds in the vermiculite that was here," Mr. Aitken said. "So we planted the seeds and vermiculite in cups on our desks. Lo and behold, a week or so later we saw sprouts."

"From then on it became a passion with us," Mr. Phelan said. "Aitken and I would take turns going down into the Pole Station snow mine—a glaciology shaft sunk 90 feet into the ice cap to study snow and ice stratification—and drag up fresh snow to water the plants each day."

"Ten thousand feet above sea level, the elevation here at the pole, hauling 20 pounds of snow around in all our cold-weather gear is galley-slave work."

"We hope the new men coming in will continue to care for our garden as carefully as we did," Mr. Aitken said. "Both Mike and I plan to send back



The New York Times (by Allyn Baum)

William Aitken, left, and Michael Phelan, with their polar garden. Strands of ivy and dwarf marigolds, right, are among the plants the two have succeeded in growing.

Showers Prohibited For Men in Antarctic

By JOSEPH GROSSMAN

N. Y. Herald Tribune

McMURDO SOUND, Antarctica, Dec. 28.—It has been estimated by some scientists that if all the ice on the Antarctic continent melted, the oceans of the world would rise about 200 feet—causing the waters of the Atlantic to pour into the 14th-floor windows of New York's Empire State Building.

That might sound far-fetched, but it must be remembered that Antarctica covers 5.5 million square miles and 98 percent of

it is covered with ice, in some places two miles thick.

Despite all the frozen water here, 800 Navy and scientific personnel at McMurdo Sound were without water for showers.

In fact, an order prohibiting the taking of showers was issued.

Presumably, a man wishing to disobey this order would have to smuggle the hot water used with the powdered cocoa out of the mess hall!

One would think that with water, water everywhere, showers would be as plentiful as icebergs here, but in the Antarctic, nothing is simple.

Melting the snow to provide water for showers requires Diesel fuel.

And the Diesel fuel—547,000

barrels of it—was aboard the tanker *Chattahoochee*.

The *Chattahoochee* was one of six ships locked in the ice pack off McMurdo, inching forward behind icebreaker "interference" at the rate of about three miles a day.

So, a big decision was made. Hoses were strung across the ice from McMurdo to the edge of the ice shelf, five miles away. When the tanker reached this point, the oil began to flow into McMurdo's tanks.

There's nothing like a Saturday night bath, even in Antarctica. And when you've waited three weeks for a lathering, that's bound to be an occasion.

(AP) — Hurricane winds that sprang up Christmas Eve broke up the Antarctic pack ice in McMurdo Sound. Four American icebreakers had been constantly at work since early December keeping open the narrow 50-mile channel to the main U.S. base in the Antarctic.

The U.S. Navy said the winds from the south which cracked the ice and drove floes out to sea also assisted planes flying from McMurdo to New Zealand. But planes waiting to fly to Antarctica are being delayed by head winds.

Antarctic Maps Change Constantly

By JOSEPH GROSSMAN

N. Y. Herald Tribune

McMURDO SOUND, Antarctica, Dec. 24.—The maps of the Antarctic are undergoing a constant change.

The additions to the charts of the White Continent, which are issued each year, result from an extensive project under the direction of William R. MacDonald, of Crownsville, Md., photogrammetrist in charge of the Antarctic mapping program.

MacDonald and his team plan to survey and identify characteristics in 275,230 square miles of Antarctica. The areas under study will be covered by planes flying some 44,150 miles.

Modern mapmaking is accomplished by a process called trimetrogon mapping—the placement of two oblique and one vertical cameras in a P-2V—a Second World War patrol bomber especially equipped for the work.

These ski-equipped planes work from McMurdo Sound and Byrd Station. This year they're photographing a 650-mile area from near Cape Hallett to Mount Dalton—designated "Topo West"—and a 950-mile stretch between the Beardmore and Shackleton Glaciers—"Topo East."

Both programs are under MacDonald's supervision. The two summer-long operations continue last year's "Topo South," which mapped the area from McMurdo to the Beardmore Glacier, and "Topo North," from McMurdo to Cape Hallett.

MacDonald noted it won't be necessary to photograph the entire 5.5-million square miles of Antarctica, since most of the interior is "cartographically insignificant"—in other words, ice, ice and more ice.

"The current approach is to map cartographic features in an area about 200 miles in from the coast," MacDonald explained. Although there could be large crevass fields deeper inland, which scientists would appreciate having noted on their charts, these areas are of less immediate importance.

Scientific teams are provided with up-to-date maps each season in the Antarctic. These are also made from the previous season's photogrammetric operations. Besides topographic maps, which show contours of geographic features, the films provide planimetric maps, which show the scientists line repre-



The New York Times (by Allyn Baum)

EARTHQUAKE RESEARCHER: Raymond Dibble of Wellington, New Zealand, makes soundings on Ross Ice Shelf with specially adapted tape recorder during his research into the cause of Antarctic earthquakes, a puzzle for years.

QUAKE TEST USES ICEBERGS' NOISES

Tapes Made in Bid to Find Antarctic Tremors' Cause

By ALLYN BAUM

The New York Times

SCOTT BASE, Antarctica, Nov. 10—The bangs and shrill whistles of icebergs the size of Connecticut breaking off from the Ross Ice Shelf may provide

sentations of their areas.

All maps in this operation, supported by the National Science Foundation, are prepared on a scale in which one inch represents 250,000 inches. The plan is to publish the finished charts on a scale of one to one-million.

The foundation is considering switching to C-130 "Hercules" planes, with greater range than the P-2Vs. They would allow mapping of a much larger area of the Antarctic.

a clue as to what causes earthquakes in this region.

These noises are being recorded and their times noted for comparison with seismologists' reports of quakes.

Scientists have been puzzled for years by these quakes, which occur on the average of once or twice a day. Some days there are as many as six.

Raymond Dibble, 36 years old, senior scientific officer of the geophysics division of the New Zealand Department of Scientific and Industrial Research, believes the quakes are vibrations caused when huge icebergs

break off from the shelf and move to sea.

To test his theory, Mr. Dibble has taken an ordinary household tape recorder, transistorized it and lowered its frequency range to one cycle a minute. He has slowed the tape so that it barely moves and has attached geophones to record the sounds made by the ice. Geophones are low-frequency microphones used by scientists to listen to ground noises.

The idea for the experiment came to Mr. Dibble when he recalled that New Zealanders used to remember "hearing" local earthquakes. Typical comments were, "I heard it coming you know; first that strange rumble, then a couple of bangs."

According to Mr. Dibble, the rumble was the sound of the distant earthquake moving in and the bangs were the sound of the local quake.

Mr. Dibble explained that the sounds of a nearby earthquake come as a quick "crack" followed by a long "bangggggg" that rises in crescendo to a near squeal. He said the sound made by icebergs when they break off the ice shelf was much the same, but at a higher pitch, "almost a whistle."

The scientist is convinced that he will come up with some positive findings. A tape library will be developed to compare the ice sounds and the seismographs through the years.

Antarctic Research Unit Gets Explorer's Papers

ADELAIDE, Australia — A valuable collection of more than 250 books, pamphlets and other items gathered by the Antarctic explorer the late Sir Douglas Mawson has been presented to the Mawson Institute for Antarctic Research at Adelaide University by his widow, Lady Mawson, the Australian News and Information Bureau reports. The institute was founded in 1959 in Sir Douglas' memory, and the collection will form the nucleus of its library.

ANTARCTICA SET FOR WHITE YULE

PEARL HARBOR (AP)—It will be a white Christmas for sure for U.S. scientists and sailors in Antarctica—the snow and ice are 7,000 feet thick.

The holiday will be celebrated Tuesday with the trappings of the season or at least as many as possible. These include Christmas trees flown 2,000 miles to the ice continent from New Zealand.

Trees do not grow at the South Pole.

Ships have brought gifts from families in the United States and men stationed on the ice—they call Antarctica the "refrigerator of the world"—have responded with presents.

The Navy reports the most popular items sent home this year are penguin jewelry and stuffed, toy penguins in honor of the continent's famous bird.

DOGS STILL USED IN THE ANTARCTIC

New Zealanders Find Them
Superior to Tractors

By ALLYN BAUM

The New York Times

SCOTT BASE, Antarctica, Nov. 10 — Though the Americans have mechanized the Antarctic with tractors, Weasels, Sno-cats, Sprites, and airplanes, including Otters, the New Zealanders here still depend upon sturdy Huskies and sledges to conduct their scientific explorations.

"We'll never completely mechanize," said Lieut. Col. Ronald Tinker, leader of the Scott Base New Zealand Antarctic Research program. "Dogs can go places tractors can't tread. They rarely break down and when they do there are no spare parts needed, just rest."

Colonel Tinker continued:

"Our territory of exploration covers nearly one-third of all the exposed rock in the Antarctic and only dogs can get about in this area."

When on the trail the dogs, hauling 1,200 pound loads, can average between 18 and 24 miles a day, depending upon terrain. They travel at a steady two- or three-mile-an-hour clip and it is no easy task for the two men who make up each sledge team to keep up.

The dogs were brought from the Wellington zoo, with a few Greenland dogs introduced to improve the strain.

The original kennel of 24 dogs has grown to 60, all bred on the Antarctic continent. The dogs, either a tawny brown, off-white, black, or spotted, are about 30 inches to the shoulder and weigh about 85 pounds. The breeding of the dogs is now down to a scientific basis and the New Zealand dog handlers believe they may be developing a specific Antarctic strain.

Frank Graveson, one of the dog handlers here, said the dogs were "strange beasts." They are friendly enough to humans, even affectionate, but among themselves, they are certainly the meanest animals on earth.

They even fight in the traces on the trail and the only way we can break it up is to grab whatever is lying about, ropes, chains, even hammers, and join the fray.

"But on the trail when they're going they love nothing better than to pull, pull, pull—steadily—hour after hour," he said.

The training of the dogs to the rigors of the traces and hauling of sledges is a long arduous business. Every day for four hours two dog handlers take out eight- and nine-month old pups, harness them to their traces and set out, running all

Australian Scientific Group To Re-explore Antarctic Isle

CANBERRA, Australia—An Australian scientific expedition of six men will visit Heard Island near the Antarctic from January to March next year, the Australian News and Information Bureau reports.

The expedition plans to make the first ascent of the active volcano, Big Ben, which dominates the island at a height of 9,000 feet.

The scientists will also study conditions on the island, including whether the snow and the ice covering is increasing or diminishing, the ability of man to acclimate himself to the cold, and the development of the colonies of sea birds in the seven years since Heard Island was last visited.

From 1947 to 1955 Australia had a scientific station on the island.

900-Mile Journey Ends

The New York Times

MELBOURNE, Australia, Nov. 21—A six-man team from the Australian base at Wilkes has just completed a 900-mile trip by tractor train across Antarctica to the Soviet base at Vostok.

The team, which set out from Wilkes on Sept. 17, will rest at Vostok for several days before starting the return journey. The six men are due back at Wilkes on Jan. 15.

A spokesman for Australia's Department of External Affairs said in Canberra today:

"This journey must rank with the great achievements of Antarctic travel."

The team was led by Robert Thomson of New Zealand. The other members were four Australians and one American, Danny Foster of Loudonville, Ohio.

The main purpose of the ex-

pedition was to measure, by seismic soundings, the depth of ice every 20 miles along the route and to take gravity readings at five-mile intervals to obtain a picture of the rock surface thousands of feet below.

At one point the party found that underlying rock was three miles beneath the ice surface.

With the command, "Are you ready, boys?" the dogs stand up alert in their traces, look back eagerly at the sledge commander at the back of the team and seem to restlessly await the next command: "Wheet!", which means "go."

"Wheet! boys. Wheet! Wheet! Wheet!" Those are the words that are repeated over and over and over again as the teams lurch forward and trot steadily across the snow-swept Antarctic landscape.

To turn the dogs right, the command is "Auk!" To turn left, the cry is "Rrrrruck." The dogs for some reason prefer turning left to right. And to stop the team all that is said is a barely audible "Ahhh, boys, ahhh," which brings the dogs to a slow halt and an immediate bickering among themselves.

Valuable Rocks Borne 9,000 Miles, Then Lost

LONDON, Oct. 10 (AP)—Two British explorers trekked 300 miles across Antarctic wastes to chip valuable rock specimens from the Tottan Mountains in a geological research project.

Packing their find on dog sleds, Dennis Ardos, glaciologist and Colin Johnson, radio operator, struggled back to their base. The rocks were loaded on a ship, which fought her way out of the pack ice and sailed to Britain. Then a truck driver lost the rocks.

"I am very annoyed about it," Sir Vivian Fuchs, head of Britain's Antarctic survey program, said last night. "To think of it, all the way back from the Antarctic, 9,000 solid miles, only to get lost between Southampton and Birmingham University."

It is believed the rocks were transferred to a wrong truck during the 135-mile journey from the Southampton docks.

pedition was to measure, by seismic soundings, the depth of ice every 20 miles along the route and to take gravity readings at five-mile intervals to obtain a picture of the rock surface thousands of feet below.

'Southern Ocean' Suggested

MOSCOW, Nov. 4 (UPI)—Russian geographers have suggested the name "Southern Ocean" for the waters around Antarctica, the official Soviet press agency Tass reported today.

Russians Off to Antarctica

LONDON, Nov. 27 (Reuters)—The eighth Soviet Antarctic expedition sailed today from Leningrad, the Soviet press agency Tass reported.

The sledges hauled by the

RUSSIANS WILL ADD 2 ANTARCTIC POSTS

The New York Times

MOSCOW, Oct. 26—The Soviet Union will add two year-round Antarctic observation stations in the 1962-63 southern summer season.

The newspaper Sovetskaya Rossiya said today that a 200-man expedition planned to leave in the first half of November on ships. The expedition, the Soviet Union's eighth since it began an Antarctic study program in 1955, will be headed by Dr. Mikhail M. Somov, who led the first expedition.

The Russians now operate two permanent stations—Mirny, their Antarctic headquarters, and Novolazarevskaya on the Princess Astrid coast. They now plan to add Vostok and Molodezhnaya.

Vostok, one of the original Soviet posts at the geomagnetic pole, was closed for the Antarctic winter of 1962 and was to have been reopened as a seasonal station. Its planned conversion to year-round use represents a change in Soviet plans.

Soviet Polar Station Set Up

LONDON, Sept. 29 (Reuters)—Soviet Antarctic explorers have trekked 125 miles in 10 days through heavy snow storms to set up an automatic weather station on the polar ice slope, the Soviet press agency Tass reported today.

South Pole Sunny

The South Pole is sunnier than any other place on earth during its summertime, but 90 per cent of the rays are reflected by the ice.

Poppies Grow in Arctic

JUNEAU, Alaska—Although the soil never thaws to depths of more than a few inches, poppies and many other flowers grow above the Arctic Circle.

This year two major dog sledge field parties set out from Scott Base to cover 8,000 square miles each in an area between Terra Nova and Baywood in Victoria Land. Each party consists of four men, two sledges and eighteen dogs, nine to a trace.

They will be working in mountainous terrain where the peaks top 13,000 feet. Last year, one sledge party worked up to an altitude of 11,000 feet.

Under the cold, hostile icescape of the Arctic, the U.S. has built a pilot "city" to study construction

'MOON COLONY' ON EARTH

Beneath the vast, sub-zero plains of Greenland's ice cap, man is making his first major step toward developing the immense wastelands of the polar regions—and, through this experience, perhaps the uncharted lands of outer space. Here, 800 miles from the North Pole, the U.S. Army Corps of Engineers has established a village under ice, Camp Century, which contains: the first prefabricated, portable nuclear power plant designed to meet the needs of an autonomous community; a water and sewage operation considered unique in the world; and buildings made of paper and resin, and of frozen snow and ice.

The Earth's greatest untapped territory, its polar regions, comprise more than 7 million square miles, or one-eighth of its land surface. Aside from strategic military implications, and the exploration of unmapped mineral resources, Camp Century may even suggest answers for an overflow of world population, increasing at a rate of nearly 100 million persons a year. And since so many of its problems are similar to those expected in future moon colonies, some U.S. space scientists have suggested our astronauts live at Century and learn.

Laboratory under ice

The camp, 152 miles east of Thule Air Force Base, is operated by the Army's Polar Research and Development Center under agreement with Denmark. In addition to the atomic power plant, its caverns house a complex of barracks and laboratory buildings that wind through four different levels of ice tunnels, accommodating up to 250 persons; during its planned ten-year lifetime, Century may house as many as 800 people.

As a multipurpose laboratory, the camp has supported nearly 100 research projects during the past two years, ranging from up-

per-atmosphere physics to improved weather forecasting techniques and glacial geology (including one program to drill two miles down to the very bottom of the ice cap). Experiments are carried out in radio communications, food preservation, special medical and healing problems, fuel and chemical storage in ice, over-ice and under-ice transportation methods, the development of better fabrics for cold climates. Planned are other projects such as the growing of fruits and vegetables with the aid of ultraviolet lights and hydroponic farming. Obviously many of these programs have significant value beyond the Arctic Circle.

The unprecedented task of maintaining a city under ice seemed jinxed from the beginning by the temperamental nuclear power system, a pressurized water reactor. Excessive radiation had to be overcome, as well as a multitude of problems in the steam generator and feed-water equipment (and a tendency in the extreme cold for the lube oil to pick up damaging steel particles from the drums in which it was stored). But the power plant is now operating as intended by its designers. It is a 1,500 kilowatt unit named PM (for Portable Medium Power) 2A, prefabricated on sleds in 27 giant packages that could be flown in by plane. PM-2A weighs 472 tons and cost \$6 million. It has already proved the

value of nuclear power for remote and fuelless regions: ordinary generators to power Century would have required 555,000 gallons of diesel fuel a year, costing more than \$28 million (\$11 per barrel for fuel, plus \$42 transportation costs). In contrast, only 100 pounds of atomic fuel are needed to meet round-the-clock requirements for an entire year.

Pre-Columbian water

Citizens of Camp Century have the unique distinction of drinking water that predates the discovery of America. The water is "flash thawed" snow and ice, believed to be the purest natural water supply in the world, taken from a well whose current glacial depth represents more than 400 years of history. A steam drill inches its way through the ice cap, creating bell-shaped pools of melt water, which is pumped to the surface at a peak rate of some 10,000 gallons per day.

All buildings that require water and sewage facilities are built in six adjacent tunnels on one side of the camp (see plan). These plywood structures include Century's hospital, laundry, mess halls, washrooms and showers, nuclear power plant, and research laboratories. Water lines, including those for fire fighting, are heated by electric cables, insulated, and built with flexible joints—in the 17-degree ambient temperatures of the tunnels, freezing is a constant threat.

Sewage passes into a 4,000-gallon collection tank, whence it is pumped beyond the city's perimeter to a 350-foot hole in the ice cap. This polar septic tank does not require servicing, as the warm sewage slowly melts its way into the ice, automatically creating a basin that would take scores of years to fill. The extreme cold kills harmful bacteria.

Walls that creep

The biggest housekeeping problem under the ice cap, however, is the fact that the ice walls are forever closing in. Scientists know little of what precisely causes the flow, and they know less about how to control it.

Most of the tunnel walls at Century creep inward at about an inch per month; a given tunnel shrinks two feet a year. The greatest mess in the camp takes place in the "warm" tunnels housing the kitchen and dining halls, the stand-by diesel generators, and the nuclear power plant, where closure sometimes reaches two inches a week on each wall.

Heat loss from the buildings is the major cause of this rapid flow, and no matter how much warm air is sucked out of the buildings, and pumped to the surface, and no matter how much cold air is forced into the tunnels where closure is greatest, the problem continues. Some 40 tons of ice must be removed from the tunnels every six days—with picks, shovels, power saws, and unlimited verbal attacks. Needless to say, considerable research is underway to learn how closure can be impeded, if not stopped.

Building with "snowcrete"

Scientists are also investigating the relationship of creeping ice and milled snow, the material used to build the arches over Century's tunnels. This "snowcrete" actually was discovered by accident.

The engineering teams had brought with them a diesel-powered Swiss snow machine called a Peter Plow, designed for clearing Alpine roads of avalanches. The plow's powerful rotary blades chew up tons of snow which is fed to blowers at the rear.

When the plow first went to work, a startling discovery was made. The wind had carried the fine, sandlike granules and deposited them in a neat ridge of snow along the edge of the trench. Within two hours the subfreezing temperatures had transformed the milled snow into a dune as hard as concrete.

It was suggested that an arch of corrugated sheet metal be placed over the trench and the plow driven along the frozen dune, devouring it and spraying the twice-milled snow back over the arch. Within a few hours, the arch was strong enough to walk (c) 1962 Time Inc.

PHOTOS: LEE HAMILTON



Lee Hamilton, science editor of *Junior Scholastic* magazine and a member of the American Polar Society, spent 15 days living with the Army Engineers at Camp Century. His book, *Century: Secret City of the Snows*, will be published by G. P. Putnam's Sons.

and survival in the polar regions—and, perhaps, in outer space.



Below, a research tunnel shows undercut ice-arch cavern, "Siamese" ice door,

transformer lines. In foreground: a section of the new paper-and-plastic hut (bottom).



U.S. ARMY PHOTO

LEE HAMILTON

over and "snowcrete" was born. Century's city of 36 tunnels has been built by this cut-and-cover technique. Research continues on different kinds of arched trenches and snow-covered inflated domes. The next step will be adding alloy materials such as sawdust and glass fibers. Space scientists are especially interested in these applications: some think that lunar dust can be utilized in a manner similar to snowcrete.

Last summer work began on an extraordinary Arctic subway. In an oval trench adjacent to Century, research is proceeding with flatbed railway cars and trucks to determine whether an undersnow railway system might be built to Century's base supply camp 138 miles away. Eventually, a railway snaking hundreds of miles under the ice cap is thought practical as an ideal way to supply polar communities built either above or below ground.

Paper buildings

Century's major living units underground are prefabricated plywood buildings, standard Army T-5 structures 16 feet wide, 76 feet long, and 12 feet high.

Each unit is raised two feet to provide circulation of cold air around it; radiant heating pipes are installed between floor ribs, with heat blowers in the walls.

The T-5s, however, were never intended for such use; their substantial heat loss helps melt the snow walls, and they are stuffy and hard to ventilate under the ice. Dry and parched throats are an occupational hazard, and there is a constant danger the buildings will go up in a gulp of flame.

To overcome these problems, a new concept has been evolved: a unique hut-building of paper, glass fiber, and polyurethane foam (photos left). This "building in a barrel," as it is called, can be air-dropped and erected by unskilled labor on the spot. When completed it is self insulated, fire retardant, and virtually maintenance free.

Basic core of the building is a collapsible paper honeycomb which can be extended to a length

of 16 feet, with a 3-foot width and a maximum thickness of 6 inches. A 1/16-inch layer of epoxy resin is poured into an aluminum panel mold and topped with a cloth of loose glass fibers and the extended honeycomb. The reverse procedure is followed on top. Before the epoxy is poured, a large sheet of vinyl is placed under the aluminum mold. When all the ingredients for the panel have been sandwiched together, the vinyl is sealed over the mold and a vacuum-bag curing process employed.

Enough air is drawn out of the bag by a vacuum pump so that only 2 psi pressure remains, causing the atmospheric pressure on the outside of the bag to act as the press. The mold remains under 2 psi pressure at 180 degrees for four hours.

The result is an unusually strong panel. When suspended between two points, one 50-pound, 16-foot section will support 5,000 pounds.

All panels—floors, walls, and ceiling—are made in 3-foot widths, and from 4 to 8 inches thick. Four-inch-wide fabric adhesive tape is heated and applied to seal the joints. Doors, windows, and vents can be installed at will by sawing out a hole.

Last test: people

Future moon colonists will almost certainly face many of the same psychological hazards and much of the loneliness of Century's pioneers. The mental and physical stress of living there constantly reminds the men they are without the sounds, smells, and colors of civilization—eating the same food, seeing the same people, following the same hard routines.

No scientific or military personnel are asked to live and work in this under-ice world for more than six months at a time, and those who return do not come back unless they have been in the U.S. for at least four months.

"What we need," said a young civil-engineering student serving in Century's other-world, "is women, a few trees, and perhaps a bluebird or two." And, he might have added, a few familiar billboards and traffic jams. **END**

Two U. S. Submarines Rendezvous at North Pole



The submarines Skate, left, and Seadragon after they rose to the surface in the Arctic

Skate and Seadragon Surface Through Arctic Ice Pack

By MARJORIE HUNTER
The New York Times.

WASHINGTON, Aug. 22 — Two United States nuclear-powered submarines have made a "historic rendezvous" at the North Pole, President Kennedy announced today.

"This is the first time that two of our submarines have worked together in this manner under the Arctic ice pack, and I want to congratulate all of those involved in this exceptional technical feat," the President said at his news conference.

The submarines are the U.S.S. Skate of the Atlantic Fleet and the U.S.S. Seadragon of the Pacific Fleet. They met at the North Pole on July 31 and are now on the way home.

While under the Arctic ice, the Skate and Seadragon carried out antisubmarine exercises. They surfaced at the pole on Aug. 2 through a small opening in the ice.

After surfacing, ceremonial parties and color guards from the two craft landed on the ice. Official greetings and the insignia of the submarine forces of the Atlantic and Pacific fleets were exchanged and the national anthem was played.

Crew members exchanged visits and "took a walk around the world" at the spot marking the top of the earth.

At the time of the rendezvous, the submarines were about 850 miles from the nearest Soviet territory at Cape Chelvuskina.

The Pentagon declined today to say how close to Russian territory the submarines had passed, but said the craft were "well clear and in international waters at all times."

Some days later, while cruising again under the ice, crews of the two ships heard for the first time that the two Soviet astronauts, Maj. Andrian G. Nikolayev and Lieut. Col. Pavel R. Popovich, were orbiting the earth.

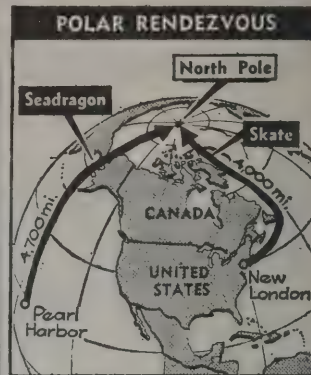
Both submarines are veterans of previous polar trips. The Skate was the first submarine to surface at the North Pole, on March 17, 1959. The Seadragon traveled by way of the North

Pole in transferring from the Atlantic to the Pacific fleet in August, 1960.

After the President's announcement, the Navy said today that all tests conducted during the rendezvous had "proved highly successful." Tests were made for sonar and warfare capabilities and underwater communications.

Civilian scientists were aboard both vessels to observe the operation of special equipment and to gather scientific data.

One of these civilians, Dr. Waldo K. Lyon, polar research scientist with the United States Navy Electronic Laboratory, was awarded the President's Distinguished Federal Civilian



Service Medal this month.

Since he was then on the polar expedition, the medal was accepted on his behalf by his wife. The White House declined at the time to disclose his whereabouts.

Joining the two submarines in the maneuvers were the icebreaker U.S.S. Burton Island, and Navy aircraft stationed in Alaska.

The Skate left her home port at New London, Conn., on July 7 for the rendezvous and is due back next Tuesday. Her skipper is Comdr. Joseph L. Skoog of Seattle, Wash.

The Seadragon departed from her home port of Pearl Harbor on July 12. Her crew will visit the Seattle World's Fair next week on the way back to Pearl Harbor. Comdr. Charles D. Summit of Nashville, Tenn., is the ship's captain.

The Skate was launched at Groton, Conn., on May 16, 1957. She was the third atomic submarine, following the Nautilus and the Sea Wolf, and the first



Crews exchange colors. Skate had come from Connecticut, Seadragon from Hawaii.

U. S. Navy



CDR. C. D. SUMMITT



CDR. J. L. SKOOG JR.

designed for assembly line production.

Mrs. Lewis L. Strauss, whose husband was chairman of the Atomic Energy Commission at the time, christened the Skate.

The Seadragon was launched at Portsmouth, N. H., on Aug. 16, 1958. Mrs. Robert L. Denison, wife of a vice admiral, failed to hit the ship's bow with the champagne bottle, but a sailor grabbed the bottle and hit the bow as the craft slid down the ways into the Piscataqua River.

Both submarines are 268 feet long and displace 2,600 tons.

The Skate was the second United States nuclear submarine to reach the North Pole. The Nautilus was the first. The Skate was at the North Pole on Aug. 11, 1958.

The Skate made a second trip to the North Pole in the darkness and cold of the Arctic winter in March, 1959. The ship remained under the ice for twelve days and logged 3,090 miles, surfacing ten times, once at the pole.

On that trip, crew members scattered the ashes of Sir Hubert Wilkins, the polar explorer, who had died the previous December. It had been his ambition to reach the pole on the ice, but never made it. However, he flew over it in 1927.

The Seadragon was used in 1960 for the first time to collect samples of plankton under the polar ice. The Seadragon also made the first underwater transit of the Northwest Passage through the ice-laden waters of the upper Arctic in August, 1960.

The New York Times.

NEW LONDON, Conn., Aug. 28—With a white-whiskered red-suited Santa Claus aboard, the nuclear-powered submarine Skate returned triumphantly today from her voyage to the North Pole.

In a brief welcome home cere-

mony and later at a news conference, the Skate's skipper, Comdr. Joseph L. Skoog Jr., of Seattle, Wash., emphasized that the voyage had not been a "feat of derring do" but the "orderly and virtually routine execution of an operational order."

A heavy rain stopped falling as the Skate hove in sight today. Navy tugs sent up streams of water from fire nozzles as she was being tied up alongside the submarines Halfbeak and Seawolf.

Relatives and friends of the crew lined the decks of the nearby submarine Fulton. Later the Fulton was the scene of a party with Santa Claus cutting a large cake for the children.

Seadragon at Seattle

SEATTLE, Aug. 28 (AP) — The commander of the nuclear submarine Seadragon, back from a polar rendezvous, predicted today that submarines of the future would cruise at depths of thousands of feet.

Comdr. Charles D. Summitt of Nashville, Tenn., in a news conference at the United States Naval Supply Depot here, said that he believed special types of submarines would be able to hug the ocean bottom.

The Seadragon and her ninety-man crew were welcomed by a crowd of about 300, including Commander Summitt's wife.

Fuel Dropped to Arctic Party

ANCHORAGE, Alaska, Nov. 14 (AP)—An emergency air drop of fuel started today for a 10-man Navy scientific expedition on an Arctic ice island 300 miles below the North Pole. The drop was expected to tide over the party until regular shuttle flights began Friday.

Polar Bears Welcomed

Trappers welcome the presence of polar bears. Valuable Arctic foxes often follow them, scavenging from kills.

POLAR PROBLEMS OF HEALTH NOTED

UN Agency Studies Point Up Psychological Hazards

The New York Times

UNITED NATIONS, N. Y., Oct. 27—Boredom, depression, suicide—this is the story of life in the frozen world of the Arctic and the Antarctic, as reported by a United Nations agency.

The findings of an 11-nation conference in Geneva on health in the polar regions were reported here this week. Sponsored by the World Health Organization, the conference studied the problems of settlers, immigrants and transients, as well as tribes, in the frozen North and in the southern reaches.

In the polar regions, man must cope with periods of intense cold and months of twilight darkness. The population is scattered and there is difficulty in establishing communications.

Civil servants, settlers, seasonal workers and personnel on scientific expeditions are often unable to bear their unchanging and dreary life, the conference found. This results in a heavy rate of accidents, alcoholism, suicide and homicide. In northern Alaska, for example, the rate of deaths from "external causes" is two and a half times that of the rest of the United States, the conference noted.

But despite hard and near-primitive conditions in the polar regions, the population there is increasing because of lowered infant mortality as well as to the influx of workers to exploit the rich natural resources.

However, disease and mental depression remain the rule in the polar regions.

"Disease problems are mainly to be found among the indigenous people who are becoming sedentary workers, collecting around them human and animal wastes that, as nomads, they used to leave behind when they struck camp," the World Health Organization said.

In one section of Alaska, a survey noted, 76 per cent of the Eskimos had radios, 6.4 per cent now used refrigeration, but only 4 per cent had piped water.

Newcomers, who often volunteer to go to the cold climate; miss the amusements and excitement of urban life. Eating the same food daily, living under unvarying conditions, and rarely encountering or communicating with persons of diverse background, they undergo great emotional strain.

Pregnant women often suffer from "obstetrical insecurity." Men become despondent and resentful toward families and friends they believe to be leading an easier life in a more friendly climate. Despite having volunteered for their work, these men can become bitter and disconsolate. They experience "Arctic imprisonment," which sometimes ends in suicide.

Another hazard is the lack of nutritional foods. Cereals, vegetables and fruit are scarce. There is a shortage of fuel for cooking and unhealthy practices often result. For newcomers the cost of food is high, and transportation, storage and preparation mean added difficulties.

The Geneva conference, which included physicians, anthropologists, psychiatrists and engineers, urged further studies of mental health problems in high latitudes, as well as the development and protection of fresh water resources and satisfactory waste disposal.

GREENLANDIC PERILED BY MODERN CULTURE

GODTHAAB, Greenland, Nov. 23 (Reuters)—A dispute over the future role of the Greenlandic language has developed here as modern European culture from Denmark is infused into Greenland's ancient Eskimo way of life.

Greenlandic, the mother tongue of the 30,000 Eskimos on this island, is seldom spoken by Danes resident here.

A Danish pastor, the Rev. Mads Lidegaard, in a letter to a weekly newspaper, the Atuagagdliutit, has drawn attention to the threat to the native language. With considerably more literature available in Danish than in Greenlandic, the position of the native tongue needs careful consideration, he said.

If Danish were to become an upper-class language, and Greenlandic a hindrance to progress and education, he declared, the native language would slowly but surely disappear.

Commenting on recent protests against increased hours allocated for Danish in Greenland's schools, he added that he believed a more general knowledge of Danish would remove the "second-class" label from Greenlandic.

Eskimo Population

Greenland is estimated to have more than 20,000 Eskimos; Alaska 15,000 and Soviet Siberia possibly 2,000. Canada has 11,500.

Eskimo Customs Fade in Alaska As Isolated Bands Move to City

**King Islanders, Still Hunting and Fishing,
for Food, Now Live and Work in Nome
—Leaders Seeking Better Schools**

UKIVOK, Alaska, Sept. 15 (AP)—The rocky cliffs of King Island, where once a hardy breed of native hunters thrived, are growing silent as the white man's ways replace the Eskimos'.

The Eskimos of King Island still hold together as a proud, independent band, but now they live much of the year in a crowded tangle of tumble-down huts on the outskirts of Nome.

They still depend on the gun and the fishline for most of their food, and they still carve intricate likenesses of Arctic wildlife from walrus ivory, but there the similarity with their old life ends.

King Island, a barren outcropping of rock, lies windswept and cold in the northern Bering Sea, ninety miles northwest of Nome and eighty-five miles from Russian Siberia.

The island is approximately a mile wide and three miles long. Its village, Ukivok, is on the south side. The houses are built on stilts and hug the sides of a steep cliff.

For hundreds of years King Island's Eskimos were isolated from the world, except for occasional visits to the mainland. They made their living from the sea.

They fished for crabs and small fish. They hunted for polar bear, walrus, and that staple of the Arctic, oogruk, a bearded seal.

"They lived almost exclusively off of the sea," according to the Rev. George Carroll, a Catholic missionary on the island. He continued:

"They were hunting and fishing practically all the time. You would see them setting off before daylight and returning late in the evening. Then they would carve walrus ivory in what they called their clubhouses. The men simply came home to eat and to sleep."

Father Carroll, who has since moved to Nome to be with the main body of King Islanders, said the modern Eskimo thought life on the island was too rugged, although four of them remained on the island the year around.

In the past, they all had stayed at King Island throughout the year, with brief trips to Nome to sell their ivory carvings and to buy supplies.

But, as Paul Tiulana, one of the leaders of the King Island group, explained, the Nome visits became more frequent and more prolonged.

In recent years, the King Islanders have been staying in Nome from early spring to late fall, and they are thinking of establishing a new permanent home at Cape Wooley, forty miles northwest of Nome.

Mr. Tiulana said:

"My people hear men say the hunting by Cape Wooley is good all year long. Maybe we would be able to have a good school there, too. I am not an educated person myself and when I look for a steady job, I am even more aware of that."

The Bureau of Indian Affairs maintained a small elementary school on King Island at one time, but closed it several years ago because of the danger of falling rocks from the cliffs above.

"Some of the boys went down to Mount Edgecumbe near Sitka and over to St. Mary's and got better education and now they are employed all year around," Mr. Tiulana, the father of seven, said. "That's pretty good. It's better than carving ivory."

In Nome, some of the men find work in the rapidly dwindling gold mining operations around the city. Others find work as part-time longshoremen. But, for most, ivory carving brings in their only money.

"Unfortunately, now, with

Discovery Sets Back Aleut Settling

MADISON, Wis., Sept. 20 (UPI).—Remains of an ancient Aleutian village shows that man probably came to the volcanic string of islands southwest of Alaska about 1,800 years earlier than previously believed, it was reported today.

Two University of Wisconsin scientists, W. S. Laughlin and W. G. Reeder, said tests of bones, primitive tools and artifacts showed man found the lonely islands about 1,800 B. C., "give or take 180 years."

Laughlin, an anthropologist, and Reeder, a zoologist, said they also had uncovered a mystery about the evolution of the ancient Aleuts (Aleutian Islanders).

The skeletons of the Aleuts differ appreciably from those of the Eskimos—ancient settlers of the mainland—indicating the two types evolved separately after crossing to Alaska together from Asia.

their contact with whites, they are getting somewhat commercialized," Father Carroll said. Some of the King Islanders, for instance, now ask to be paid by tourists taking their pictures.

"Four or five years ago you wouldn't have found that at all," Father Carroll said. "They would have been very happy to have you there, taking pictures. You would have been welcome and they would have treated you very well."

During the winter months it is not unusual to see a lone hunter, dragging a small sled, trudging out over the ice to hunt marine animals beyond the huge pressure ridges of ice that build up offshore.

But, for most of the King Islanders, Nome means long hours spent in the carving house.

"It takes a good carver about six hours to make a three-inch polar bear," Mr. Tiulana said. He will receive \$8 to \$10 for it.

"It isn't much, but if he can catch a few tomcod and crabs and hunting is good to him, he can make a living."

Uranium and Coal Output Shows Increase in Alaska

ANCHORAGE, Alaska (Reuters)—Alaska, once famous for its gold rush, today is developing a variety of other mineral resources undreamed of by the early prospectors.

While applications continue for off-shore gold prospecting rights, the output of uranium and coal is increasing.

Other mineral wealth, apart from oil, being exploited or explored, includes mercury, silver, platinum, copper, antimony and gem stones.

Alaska's only uranium mine this year received an increase of 30,000 pounds in its uranium production allocation from the Atomic Energy Commission. About 2,500 tons of uranium ore was mined in 1961 at the properties at Bokan Mountain, on Prince of Wales Island.

Polar Bears Fast Afoot

Running polar bears have been timed at twenty-five miles an hour. A man, running a mile in four minutes, is traveling at fifteen miles an hour.

A Funny Thing Happened On Prof's Walk Across Alaska...

Associated Press

FAIRBANKS, Alaska, Aug. 24.—Dr. Rune Lindgren, 42, a Swedish professor who walked 300 miles alone across Arctic Alaska, says he met a brown bear, two grizzlies and three wolves.

"None of the animals bothered me, and I never had to use the 9mm luger pistol I was carrying," he told a reporter yesterday.

"I just said 'hello' in Swedish to the brown bear and he went away."

Lindgren, down 20 pounds

from his normal 188, is undergoing physical tests at the Air Force aeromedical laboratory here. He leaves Monday to return to Johns Hopkins University in Baltimore, where he is a visiting professor.

He said he lived primarily on pancakes during the trek, "But I couldn't resist eating some of the Arctic berries." He carried a rucksack, two cameras, a canvas tent, a sleeping bag, cooking utensils and the gun.

He hiked from Demarcation Bay on the Arctic Ocean coast near the Canadian-American border to Arctic Village, a tiny Indian community in

the Brooks Mountain range 250 miles north of here. It took him four weeks.

A bush pilot dropped food to him midway in the trip.

Lindgren said his closest brush with danger came in the third day when he fell into the Kongakut River.

He had hoped to climb an unnamed 8200-foot peak in the Brooks range. But bad weather kept him from it.

Why did he make the journey? In a letter to the Anchorage Times, written before he started the trip, Lindgren said he was challenged by the area "one of the last undisturbed areas of the northern hemisphere."

MUSIC OF ESKIMOS IS PUT ON RECORDS

Alaskan Teacher Says Folk Songs Are Dying Out

An Alaskan music teacher has reached the half-way point of a two-year effort to record her state's Eskimo music before it succumbs to advancing civilization, according to The Associated Press.

"Such a project as the recording, transcribing into notation and analyzing of Eskimo music must be undertaken now," says Mrs. John Koranda, "for it is almost already too late to obtain much of the real folk music."

Mrs. Koranda is especially interested in collecting old ritual songs, but she says:

"My collection includes many songs of recent composition in the traditional native style. Song and dance are still a challenging activity — the villages and Eskimos take great pride in composing new songs and dances.

"Occasionally a phrase in one of these songs may sound suspiciously like a Christian hymn tune or a popular song. This is to be expected, for the Eskimo is no longer isolated. Mail order catalogs, radio, the church and DEW-line civilization have modified the folk art forms understandably."

The Eskimos often are reluctant to sing any of the pre-Christian ritualistic pagan songs for her. They also are reluctant to sing any of the humorous game or ridicule songs that have off-color words.

Mrs. Koranda terms the importance of music to the Eskimo "almost awe-inspiring." She says:

"No task, duty, game, social event or act of worship was without its music expression except this: The Eskimo apparently sang no war songs or love songs."

Her work, which is part of the Alaska Festival of Music research program, received a two-year \$17,000 grant from the Loussac Foundation in Anchorage last fall.

Mrs. Koranda, former head of the University of Alaska music department, had financed her own research in the past. She now teaches music in a Palmer high school and is the wife of Dr. John Koranda, botanist with the university's experiment station in Palmer.

The music itself Mrs. Koranda describes as "melodic, chant-like, primarily irregular in rhythm, vigorous and melodious."

"It is sung in unison or unison at the octave. The melodies are often pentatonic or even limited to three or four notes," she says.

Beryllium Rush Is On in Alaska After U. S. Finds New Deposits

Prospectors Stake Claims on Scarce Space-Age Ore 70 Miles From Nome

The New York Times.

WASHINGTON, Sept. 2—Discovery of new deposits of beryllium ore in Alaska has started a rush of prospectors to the forty-ninth state.

The recent discovery was made during geologic mapping by a field party of the Interior Department's Geologic Survey. The department said the resultant movement of prospectors to the site, in the Lost River area about seventy miles northwest of Nome, was reminiscent of the gold-rush days of the Eighteen Nineties.

Within a few hours after announcement of the discovery, planes were bringing in parties of fortune-seekers. Many claims were hurriedly staked.

Beryllium, a scarce metal worth about \$70 a pound, is valuable as a strengthening and hardening material when alloyed with copper and nickel and has potential use in supersonic planes, spacecraft, missiles and nuclear reactors.

The ore was discovered by a party led by C. L. Sainsbury, using a portable detector. The department said the detector had been built by William W.

"The accompaniment is the tambourine-like drum, the only Eskimo instrument. This is a large hoop of willow across which is stretched a membrane — the peritoneum of the seal, for example. The drum, which has a handle, is usually struck from beneath the frame by a wooden wand. The drum head and rim are both touched by the wand in this strong stroke.

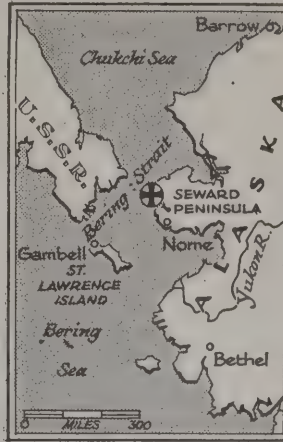
"There are box drums, box-shaped and decorated, which are used for the ritual wolf dances. Rattles may also be used. But there are no other native instruments."

Most of the Eskimo songs are accompaniment to dances, she notes.

The dancers, she adds, retain at least one custom from the pre-Christian era.

"The Eskimo dancers I have seen always wear mittens. These may be specially designed gauntlets adorned with bird beaks and ivory amulets or they may be the ordinary garden variety of canvas gloves," she says.

"One theory advanced for this unusual practice is that the hands do all the menial, daily tasks, so traditionally one covers them when dancing to please the Inua, or spirits."



The New York Times Sept. 3, 1962
Lost River area (cross)
where ore was discovered.

Vaughn, an electronics engineer, in the survey's electronic laboratory at Denver.

The device shoots gamma rays into an ore sample. If beryllium is present, neutrons are emitted and are registered on a counting device, giving the approximate percentage of the metal in the sample.

As beryllium ore is not as easy to detect visually as gold or many other ores, the Geological Survey displayed samples of the beryllium ore so treasure-hunters would know what to seek.

Mr. Sainsbury used the detector to test specimens brought to him. Brief "schools" of this sort were held in Nome and at the site of the discovery.

The new deposits of beryllium are four to seven miles from a like deposit, now being explored by mining interests, that was found by the same Geological Survey team last summer.

In the Lost River area on the western Seward Peninsula, in northwestern Alaska, beryllium occurs as the mineral chrysoberyl. The mineral is intergrown with fluorite and tourmaline in veinlets in limestone, usually associated with dikes of igneous rock that intrude the limestone.

Individual zones of beryllium ore are as much as several hundred feet long and thirty feet wide, the department said.

Ore zones investigated so far by the Geological Survey are scattered widely in a six-mile area considered favorable ground for prospecting.

The survey said the association of beryllium ore with previously mined tin deposits in the Lost River area, and the fact that the chrysoberyl was finely divided and not easily recognized, suggested that more of this type of beryllium ore might await discovery near tin deposits elsewhere in the world.

AEC Shelves Project to Blast Arctic Harbor

By the Associated Press

WASHINGTON, Aug. 24

Alaskan Eskimos have been informed that the United States Government isn't going to order any time soon, if ever, a big nuclear blast in their area.

The Atomic Energy Commission disclosed Friday it had shelved long-laid plans to blast out a new harbor above the Arctic Circle, in the vicinity of Cape Thompson in northwest Alaska. These plans—known as Project Chariot—had disturbed the Eskimos.

As the AEC put it, it had "decided to defer for the present, any recommendations to the President on whether to conduct the experiment." Since the President himself would have to signal for the big blast, this means it isn't going off in the foreseeable future.

A tip that it probably never will go off was a further announcement that a camp site near Ogotruk Creek is being put on "a caretaker basis." Scientists based at this camp have for the past four years fanned out, checking the area in preparation for the possible explosion.

The government has spent \$3,900,000 on the preparations so far, but officials said this wasn't money down the drain. Much scientific data has been gathered, they said.

NATIVE LAND RIGHTS IN ALASKA DEFENDED

The land and hunting rights of Alaskan Indians and Eskimos are in danger of dissolution because of the Federal Government's failure to define them, the Association on American Indian Affairs warned here [on Aug. 23]

The rights have been recognized twice—once in a Congressional act of May 17, 1884, providing a civil government for the Territory of Alaska, and again in the Alaska Statehood Act of 1958, it was asserted.

However which land and exactly how much of it belongs to the natives and how it is to be secured to them has never been detailed, the association said.

Moreover, it said, Alaska has now been authorized to select 102,550,000 acres of public land of the United States for her own use within twenty-five years, and this threatens to cut into the natives' land rights.

The charges were made in an editorial by the late LaVerne Madigan in the association's newsletter.

CANADIANS GUESSING MAGNETIC POLE SITE

OTTAWA (Canadian Press) Pinpointing the magnetic North Pole, one of Canada's most popular geographical guessing games, has got a new solution.

All you have to do to play this contest is to put an "X" on the map, where you think the pole should be.

But to come up with the right answer is as difficult as knowing which direction the stock market will head next. It would not be tomorrow where it is today.

The magnetic pole, which wanders around Canada's Arctic according to changes in the earth's magnetic field, is constantly on the move at the fast clip, geologically speaking, of more than five miles a year.

For a really up-to-date answer of how to find it, you have to go to scientists at the Dominion observatories here. These "pros" of the game make it their job to keep track of the roving pole and occasionally take a trip to make sure it's where they believe it to be.

Ten years ago the mines and technical surveys department's map of Canada, which hangs in many classrooms and offices across the country, showed the pole on the northwest edge of Prince of Wales Island.

Dr. P. H. Serson, physicist in the observatories' Geomagnetism Division, calculates the pole now has crossed the sixty-mile-wide Barrow Strait to the south coast of Bathurst Island, about 2,300 miles northwest of Ottawa.

A more precise location is seventy-five degrees north latitude, ninety-nine degrees, thirty minutes west longitude.

Former Toolmaker Elected Arctic's Anglican Bishop

OTTAWA (Canadian Press) — A toolmaker and former northern missionary returns to the Northwest Territories early next year as the Anglican Church's Suffragan Bishop of the Arctic.

"It's always been my dream to go back as a missionary," Bishop Henry George Cook said in an interview. "Of course, I never dreamed I would go back as a bishop."

Bishop Cook, 56 years old, of London, England, was elected to the post over nine other nominees in September by the electoral college of the Church Province of Rupert's Land to act as assistant to Bishop T. B. Marsh in the church's Diocese of the Arctic, covering 1,604,000 square miles of the Northwest Territories and northern Quebec.

There are 23 mission stations scattered across this huge land mass with 10,000 church members, most of them Eskimo.

Frozen Ground Is Found 1,475 Feet Deep in Arctic

RESOLUTE, Northwest Territories, July 26 (AP)—An Arctic expedition reported today the deepest permafrost measurement ever made in North America.

A temperature-measuring cable was installed in a dry hole that an oil company drilled into the permafrost, or permanently frozen ground. It showed that the Arctic ground at Winter Harbor on Melville Island was frozen to a depth of 1,475 feet.

The scientific team, which includes two experts from the United States Department of Interior, installed a 2,000-foot cable Tuesday in the hole, which is two and one-half miles deep.

They said that they believed the permafrost extended even deeper than the measurements indicated, but that this would be known only after heat from the drilling operation dissipated.

The expedition was under the chairmanship of Dr. George Jacobsen, Arctic construction engineer and co-sponsor with McGill University, of the expedition.

ESKIMO DEATH RATE LINKED TO HOUSING

CAPE DORSET, Northwest Territories (Canadian Press) — Dr. John S. Willis of the Northern Health Service said that poor housing was one cause of the high mortality rate among Eskimo children.

"The change from igloo to shack often just changes the method of death," Dr. Willis said at a meeting of the Northwest Territories Council recently.

He said the cost of building big houses for Eskimos was prohibitive and small houses caused over-crowding that resulted in dirt and disease.

Moving Eskimos from drafty igloos and tents to low-cost plywood houses saved children from pneumonia, he said, "but then they die of intestinal diseases for lack of sanitation."

When they lived in igloos or tents, Eskimos simply moved when their shelters became dirty.

Dr. Willis said that an experimental housing development with central heating would be tried at Port Burwell, and might be an efficient way of dealing with the Eskimos' sanitation problem.

"But it will also bring the Eskimos into an urban setting for which they are unprepared by culture or training to face," said Dr. Willis.

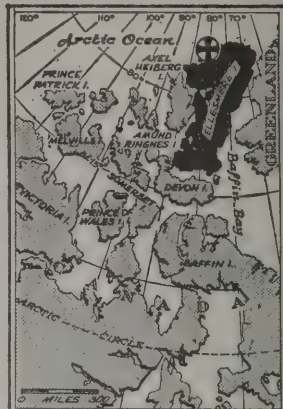
Ellesmere Ice Shelf Falls into Arctic

OTTAWA, Aug. 16 (UPI) — A 200-square-mile ice shelf has broken off the north coast of Ellesmere Island in the Arctic, the Canadian Defense Research Board reported today.

The section of shelf had stuck to the island for "hundreds" of years, the board said. Four months ago it became detached and it has since broken into several ice islands, one of about sixty square miles.

Ellesmere is the most northerly of the Queen Elizabeth Islands on the fringe of the Arctic Ocean and just west of Greenland.

OTTAWA, Aug. 16 (AP) — The detachment of the ice shelf was reported following the return to Ottawa of Dr. Geoffrey Hattersley-Smith, Federal glaciologist, from the research station at Lake Hazen on Ellesmere Island. He said the shelf had appar-



The New York Times Aug. 17, 1962

Cross indicates area where the ice shelf broke off.

ently drifted about thirty miles from its original land-fast position near the field research area of a United States party active in 1960.

METEORITIC ORIGIN IS SEEN FOR CRATERS

OTTAWA, Aug. 18 (Canadian Press)—New evidence has been collected that three craters in northern Quebec may have been carved by meteorites that plunged to earth as much as 2,000,000,000 years ago.

The data were gathered by scientists of the Dominion Observatory and the Geological Survey of Canada during recent visits to the Clearwater Lake and New Quebec craters.

Two craters form Clearwater Lake, located 800 miles north of Ottawa and fifty miles east of Richmond Gulf on the East Coast of Hudson Bay. One is twenty miles in diameter and the other fourteen miles.

The New Quebec crater, two miles across, is in northern Quebec about 130 miles south of Hudson Strait. It also forms a small lake.

Michael Robert Dence, scientific officer with the Dominion Observatory, said this week in an interview that studies of the Clearwater craters tended to disprove earlier theories that they may have had a volcanic origin.

About a half a ton of shattered rocks and other material now is on its way to Ottawa for detailed examination.

Sea Lions Dive Deep

Steller's sea lions are superb swimmers and fishers, the National Geographic Magazine says. They dive as deep as 600 feet for food. Though a grown bull may weigh a ton and fearlessly charge a man, it can be frightened off by the mere opening of an umbrella.

Historic Klondike Claim Named Canada Monument

The "Discovery" claim on Bonanza Creek, which started the Klondike Gold Rush of 1896 has been declared a national historic site, according to the Canadian Weekly Bulletin, an official publication.

A monument, twelve miles outside Dawson and within a 1,000 feet of the original claim, was unveiled recently by Harry Leamon of Dawson, a "sour-dough" who came to the Yukon in 1898.

The "Discovery" claim was staked on Bonanza Creek, Aug. 17, 1896, by George W. Carmack.

The monument was built by the Historic Sites Division of the National Parks Branch on the recommendation of the Historic Sites and Monuments Board of Canada.

Canadian Isle Found in 1948

WASHINGTON — An island nearly as big as Connecticut was discovered for the first time in 1948. The island is in Canada's Foxe Basin north of Hudson Bay, the National Geographic Society says. Long hidden by snow and ice from ships, the land mass was finally discovered by a Royal Canadian Air Force pilot on a routine flight and named Prince Charles Island after the heir to the British throne.

Survey Ship Commissioned

HAY RIVER, Northwest Territories (Canadian Press)—The first Federal Government survey vessel commissioned at this Great Slave Lake south shore port was named the Hugh A. Young in a ceremony here. Built in Vancouver, it was dismantled for shipment north.

CANADA ENLISTS AID OF ESKIMOS ON BOOK

OTTAWA (Canadian Press)—Eskimos are helping federal experts prepare a 250-page "Book of Wisdom" aimed at introducing natives of the North to the complexities of civilization.

By enlisting the aid of the Eskimos themselves, federal officials feel that the book would be prevented from being too patronizing, a common complaint against previous editions.

At a meeting on Eskimo affairs in Ottawa recently, Alec Spalding, a welfare officer in the Northern Affairs Department, said that previous editions had "talked down to the Eskimos and they felt like children."

Phyllis Harrison of Ste. Adele, Que., a free-lance writer and photographer hired as editor of the new book, said that a special effort was being made to avoid a patronizing approach. Eskimos were being invited to submit articles.

Elijah Erkloo, an Eskimo translator and interpreter in the Northern Affairs Department, is her chief helper in writing the book, which is to be printed in Eskimo and English.

"There are a lot of things we don't know about," Mr. Erkloo said. He is a 24-year-old father of two children who learned English during three years in a tuberculosis sanatorium. "Eskimos don't know anything about laws, life insurance and taxes."

The book will be called "Qaujivaallirutissat," which in Eskimo means "A book to help you know more things."

Arctic Surveyor, Taken Ill On Glacier, Is Rescued

MONTREAL (Canadian Press)—The Arctic Institute of North America reported recently the experience of one of its men that proves emergency medical services 2,000 miles north of Montreal are pretty good.

Lieut. Robert A. Tansey, a British surveyor on loan to the institute's international expedition to Devon Island, took a sudden attack of appendicitis while out on a glacier thirty miles from the expedition's base camp.

His two companions quickly radioed the base and the base radioed for aerial aid. An Otter bush plane turned back from a flight in northern Ellesmere Island and landed on the mushy surface of the glacier to pick up the 24-year-old surveyor.

A United States Air Force DC-3 on its way to Thule, Greenland, put down on a beach near the base camp. The Otter flew Lieut. Tansey to the beach and the DC-3 flew him to Thule.



A brilliant display of the aurora borealis, or northern lights, delighted residents of Yellowknife, Northwest Territory, Canada. This seasonal display has terrified and puzzled man through the ages. Modern scientific theory holds that aurora borealis and its southern counterpart, the aurora australis, are caused by electrically charged particles emitted from the sun. The particles race down into the upper part of the earth's atmosphere and collide with atoms of rarefied air. Agitated by the collisions, the atoms give off light, setting up a glow which can be seen readily from earth.

Canada Ready to Split Its Northwest in Two

By Gerald Waring
N. Y. Herald Tribune
OTTAWA.

A line north to south across Canada's Northwest Territories, an area nearly five times the size of Texas, soon will start vast stretches of Arctic tundra on their way to becoming Canadian provinces.

Canada now has ten provinces, comparable to American states, plus the Northwest Territories and Yukon, which also has territorial status. Under Prime Minister John Diefenbaker's plan to "round out confederation" by 1967, the centenary of the confederation of the four original Canadian provinces, Canada is expected to have thirteen provinces—through three territories assuming provincial status.

The Northwest Territories, covering an area of 1,305,353 square miles, but with a total population of only about 20,000 Eskimos, Indians and whites, will be split in two by legislation the government has promised to put before Parliament.

The westernmost area, embracing the Mackenzie River Valley, will become the Territory of Mackenzie.

The Eastern Arctic territory, embracing the west coast of Hudson Bay and islands to the north and east, is predominantly Eskimo in population, and the Eskimos are being asked to decide on a name for their territory.

Of more than a thousand names suggested to Federal authorities by Eskimos, the field has been narrowed to four choices which will be submitted to the natives in a referendum. They are:

Nuamarik, Meaning "the true land"; Nunassiaq, meaning "the beautiful land"; Inuit Nunanga, meaning "land of the Eskimos," and Nattilik, meaning "land of the jar seals."

Feeling is running high. Eskimos at Rankin Inlet, for example, are deriding Nattilik because, they say, there are no jar seals in their part of the new territory.

Canadian territories have a measure of self-government, be-

ing administered by councils that are partly elected and partly appointed by the Federal government. Federal authorities state that the territories' economic future looks promising on the strength of the area's resources of gold, base metals, oil and gas.

Knowledge Found Scarce About Northern Canada

Saskatoon, Sask. (Canadian Press)—Dr. J. B. Mawdsley, Director of the Institute for Northern Studies, says the lack of trained personnel and inadequate research programs are causing Canada to lag far behind Russia and Scandinavia in the knowledge of northern regions.

He said in his annual report: "It is obvious that if we are to plan wisely, the future demand must be much better informed about its problems and vast potential than we now are."

Dr. Mawdsley said the institute's second year of operation indicated it can make an important contribution by interceding in Canada's north and its problems.

Research projects last year ranged from social sciences to pure sciences, he said.

POLAR BEAR ACTS AS ESKIMO GUIDE

Hunter Knows It Will Lead
Him to Seal and Fish

WASHINGTON—Polar bears may be relentless killers, but they symbolize good luck to the Eskimos.

To survive in Arctic wastes, the bears must constantly hunt for food. The never-ending search carries them many miles in a single day, reports the National Geographic Society. When an Eskimo sees a bear, he knows that seals and fish are also near.

Trappers welcome the bear's presence, too. Valuable Arctic foxes often follow the footsteps of the giant carnivores, scavenging from kills.

The powerful, elongated bodies of polar bears have been equally at home on ice or in open sea for ten million years. They have been clocked at 25 miles an hour on ice and have been known to swim 300 miles between floes.

Thick, oily fur supports the bears in water and enables them to swim or float for hours. So heavy are their coats that scientists hunting with drug-tipped darts have had to make a hasty retreat when the darts bounced harmlessly away.

Nature has given the bears built-in Arctic sunglasses to prevent snow blindness. A special lid protects their eyes from glare. They also possess a superb sense of smell with which they can scent seal blubber twenty miles away.

A polar bear's nose may cost him a meal, for it is the only part of him which does not blend into the background of snow and ice. When the canny bear realizes he is in danger of being seen, he covers his nose with a paw and slides across the ice on his stomach to continue his stalk.

Unlike their cousins in warmer climes, polar bears do not hibernate. While males prowl through long winter nights, females settle down in snug snow dens to have their young.

For months after birth, the cubs stay close to mother, learning how to survive. Observers have seen a female go through exaggerated motions of hunting while her cubs watched attentively.

Some bears, perhaps more sensitive to cold than others, head south toward Hudson Bay as temperatures drop. When summer returns to melt the ice, the animals must make their way back along the shores. A wandering bear strolled through the Canadian town of Churchill in the summer of 1961, snarling at everyone he met and causing a 20-minute traffic jam.

Two bears nearly won their

Boston Ship Sails For Arctic Study

Boston
One of the most comprehensive joint American-Canadian oceanographic surveys ever made of Greenland coastal waters will be carried out by the USS Atka, Boston-based icebreaker, according to the First Naval District office in Boston.

The Atka, which left Boston on July 5 for a four-month cruise in the Arctic, will cover 20,000 miles, operating as far north as Thule, and as far east as Kulusuk, on the Greenland coast. Argentina, Newfoundland, will be a part of call on the return voyage.

Oceanographic observers aboard will make standard temperature and salinity tests. Phosphate and oxygen measurements of the sea will be made, employing the latest methods in chromatography.

On board are four physicists from the United States Navy's Hydrographic Office, two from the Naval Research Laboratory, and two Canadian scientists from the Bureau of Mines and Technical Services in Ottawa.

campaign to take over a United States airbase. Airmen were surprised one night to see their runway lights blink out—one by one. On investigating, they found tracks of a mother bear and a cub. The playful cub had gone up and down the runway, knocking out the lights.

4-Nation Fur Seal Panel Opens Conservation Study

WASHINGTON, Nov. 26 (UPI)—The North American Fur Seal Commission, comprised of Canada, the United States, the Soviet Union and Japan, met today on the future of the conservation agreement.

The commission will study a 1957 interim agreement to achieve the largest possible seal catch without depopulating the three North Pacific fur seal herds. Under the agreement, Canada and Japan do no seal hunting. The seals are taken only from their island rookery areas, the largest of which is under United States control. Two others are under Soviet jurisdiction.

Caribou to Be Observed On Isle Off Newfoundland

GANDER, Nfld. (AP)—Nine adult caribou have been released on uninhabited Brunette Island, off the south coast of Newfoundland as part of a unique caribou transplanting program conducted by the wildlife branch of the Provincial Resources Department.

ESKIMO PUPILS FLY TO SCHOOL IN CANADA

INUUVIK, Northwest Territories (Canadian Press)—Arctic pilots have probably the world's longest school-bus route.

Eskimo children from primitive homes scattered across the Arctic are taken to school by airplane. But the trip, more than 1,500 miles for many, is only twice yearly—for classes in the fall and home again in the spring.

"It's pretty hard finding most of them," says Paul Hagedorn, one of the pilots. "They move their camps and villages so often that there's no guarantee I'm going to find them where I took them home last spring."

Small aircraft working out of three posts scour the Arctic coast and islands for camps and homes of the nomadic Eskimos. After they have gathered the children into the marshaling centers, a large aircraft carries them to school at Inuvik, at the mouth of the Mackenzie River, 1,200 air miles northwest of Edmonton.

The Anglican and Roman Catholic hostels, which house the children, have no idea how many there will be until enrollment day. Last year there were nearly 700.

In the spring, the children, 6 to 16 years old, are returned to their homes. However, finding the homes often proves difficult because the families may move several times during the winter.

ESKIMO CLERGYMAN ASKS ANGLICANS' AID

KINGSTON, Ont. (RNS)—"We are now learning to pray for everyone in the world."

The words were part of an Eskimo's first effort at a speech in English and they were uttered here recently before more than 300 delegates to the triennial general synod of the Anglican Church of Canada.

Alanga Simonee of Frobisher Bay was one of four Eskimo delegates from the huge Diocese of the Arctic. One of his companions was the Rev. Armand Tagoona of Rankin Inlet, the first Eskimo priest ordained in the Anglican Church.

The realities of life and faith in the Arctic were brought home to other delegates by the four men.

"It is a matter of great happiness to see all the trees and strange things in the south," Gideon Kitsualik of Gjoa, in the Spence Bay area, told delegates.

And Father Tagoona said he wished there were more native deacons and priests. "It is so hard to find the men, buildings and money to train them."

A Trip Into The Icy Past

Angmagssalik, Greenland, July 19 (Reuters).—Two young Norwegian explorers, Bjoern Staib and Bjoern Reese, left nearby Umivok today to travel by dog-sled to Godthaab on the west coast, about 440 miles, over treacherous ice plateaus. They have a copy of the map Fridtjof Nansen used for his crossing in 1888, food supplies consisting mainly of chocolate and pemican, and Arctic clothing. The trip will take about two months.

OCEANOGRAPHIC UNIT IN CANADA ADVANCED

DARTMOUTH, N. S. (Canadian Press) — Canada's first Oceanographic institute swings into operation this year, collecting scientific information about the sea.

The Bedford Institute of Oceanography will not be officially opened until October 25, but advance groups of surveyors and scientists began moving in early in July.

Built at a cost of \$4,200,000 on the shore of Bedford Basin near here, the institute is under the direction of Dr. William N. English.

Dr. English will have a staff of 140 Oceanographers, Hydrographers, fisheries research scientists, underwater geologists and engineers. The number is expected to be increased to 300 by 1965.

Operating from specially equipped ships, teams of scientists and surveyors will explore the continental shelves off the East Coast and study the sea bottom in the Arctic.

They will look for untapped mineral resources buried in bottom silt, examine the chemical makeup of sea water to determine its effect on fish and plant life and chart hitherto vaguely known currents and far-northern shorelines.

The 1959 International Conference on Laws of the Sea decided that mineral resources of continental shelves—the sea bed out to where the water reaches 100 fathoms—belong to adjacent countries.

This gave Canada, with almost 60,000 miles of coastline, an increase of one-seventh in its total land area and a potentially important region for mineral research.

Eskimos Stricken by Measles

FROBISHER BAY, Canada, Aug. 5 (Canadian Press)—Five Eskimos seriously ill with measles arrived here by air last night from Igloolik, a settlement 200 miles north of the Arctic Circle. One Eskimo is dead of the disease.

ALEUTIANS CALLED IDEAL WOOL AREA

New Industry Had Origin in Chance Remark on Grass

NIKOLSKI, Alaska (AP)—A chance remark made in 1918 has brought a struggling but confident new wool industry to a lonely, treeless group of islands in Alaska's Aleutian chain.

Except for nippy winds that constantly bathe the islands, the rolling, grass-covered hills are much like the vast sheep ranges of Nevada, Utah or Oregon.

Partly because of this cool climate, partly because of a lack of predators, but mostly because only grass grows on these islands, there are now some 15,000 sheep in the Aleutians. They brought \$69,500 from 119,000 pounds of wool to Alaskan ranchers in 1960.

The industry evolved from a chance remark of a Dutch Harbor resident to a stockman and a surgeon from Oregon in 1918.

The man, so the story goes, was trying to interest William McIntosh, an Oregon stockman, and Dr. Andrew C. Smith of Portland in an Aleutian fishing venture.

They were not interested.

Mr. McIntosh did ask, however, if there were any opportunities to turn a dollar in the Aleutians. No, the man answered, there isn't a thing on the chain but grass.

It was all Mr. McIntosh needed. That same year, in 1918, Mr. McIntosh and Dr. Smith put a flock of 500 sheep on the chain, at Dutch Harbor.

Later the animals were transferred to Umnak and Unalaska Islands, and in 1923 the Western Pacific Livestock Company and the Aleutian Livestock Company brought more sheep to the area.

It was the beginning of operations that now include three large sheep ranches on Bureau of Land management grazing leases covering about 800,000 acres.

Operating one of the Umnak spreads is Arthur J. Harris, a member of the Alaska State Legislature. He has 115,000 acres under lease.

While Mr. Harris sees a promising future for sheep ranches there, he is even more enthusiastic about the prospects of beef production.

"There's not a tree, not a bush, not a shrub within a thousand miles of our operation," said Mr. Harris, an island resident for twenty-eight years.

"The islands are as good, if not substantially better, for the production of beef than they are for wool. I'm convinced there is no place on the North American continent where beef can be pro-

Red Foothold

Spitzbergen—that far-away strategic wasteland in the frozen north—continues to be of intensive interest to the Russians. They keep 4,000 citizens on the island ostensibly to mine coal. Nominally a Norwegian possession, the Russians gained certain mining and exploration rights on the island at the end of World War II. Now on this little bit of NATO territory they outnumber Norwegian owners.

Usually exploration on Spitzbergen stops during the winter. But this year the Russians have brought in a number of tracked snow vehicles and powerful helicopters. They show every intention of keeping up their activities through the dark winter months.

duced as cheaply."

There are many problems to overcome: There are no slaughter or storage facilities, and transportation is expensive. But Mr. Harris is not dismayed.

"Once these problems are solved, I am positive that the beef industry will become the predominant industry in the Aleutians," he said.

High transportation costs are felt now by wool growers. It costs as much to ship wool from here to Seward, Alaska, as it does from Australia to Boston. Added to this is the cost of getting the product on to Portland, Ore., the destination of all Aleutian wool.

On the other hand, climate contributes to making Alaskan wool unusually clean and free from seeds to burrs, explained Mr. Harris. It also makes the sheep sweat less, reducing shrinkage.

And predators present only minor problems for Alaskan sheepmen compared with the heavy inroads they make into some sheep flocks in the western United States, where bears and coyotes are almost constant hazards.

There is no commercial mutton production on the Aleutian ranges. There would be a serious problem in getting it to market. And the range land under lease has not been fully stocked. Young animals are worth more as producers of wool than meat.

Two Die in Ship Explosion

ANCHORAGE, Alaska, Nov. 21 (UPI)—A 55-foot fishing boat carrying five tons of dynamite for a seismological survey operation blew up in Cook Inlet late yesterday. Two brothers, Robert and Allen Roehl of Homer, Alaska, were killed. They were setting dynamite charges from the vessel Ketovia, under charter by the United Geophysical Couponation of Pasadena, Calif.

Soviet Will Race For Oil in Arctic

United Press International

OSLO, Nov. 7.—Russia plans to send a large oil research team to Spitzbergen in the Arctic Sea next summer, a Norwegian oil official said today upon return from a visit to Moscow.

Harald Welde, comptroller of mining activity on Spitzbergen, said he was told the Russian team will be composed of more than 100 geologists and oil experts, two expedition vessels and two helicopters.

Welde said that Russian claims for territory to drill wells in Spitzbergen will be made to the Norwegian ministry of industry before next March.

He said both Russian and American oil drillers should be operational during 1964. The U.S. firm of Caltex Co., was first into the area but Welde believes the Russians have pulled even in the race to find oil first.

Plan to Melt Arctic Icecap Held Premature by Experts

GENEVA, Switzerland, Dec. 3 (Reuters)—An international conference of weather experts has rejected as premature a proposal to try influencing weather and climate by melting the Arctic icecap, a report published today said.

Twelve scientists from 10 countries, including the United States and the Soviet Union, attended the conference here last week. It was organized by the World Meteorological Organization.

The scientists decided that in view of possible unforeseen repercussions in other parts of the earth, the "time is not ripe for conduction large-scale experiments" such as the melting of the Arctic icecap.

Electronic Device Used To Chart Siberian Waters

International waters adjacent to Siberia are being recharted in conjunction with an accelerated Coast Guard oceanography program, the Armed Forces Press Service reports.

Oceanographic information on the Oyashio Current, which runs parallel to the Siberian Coast in a southwesterly direction, is being gathered by the icebreaker Northwind. She is using Loran C, the latest electronic device used in fixing a ship's position.

Well, It Makes Whale of Story

United Press International

FAIRBANKS, Alaska. — A weekly newspaper editor here swears this really happened:

A U.S. Navy submarine preparing to surface in the Arctic Ocean near Pt. Barrow was mistaken by two boatloads of Eskimos for a whale.

The unidentified submarine, according to Jessen's Weekly editor Richard Greuel, escaped unharmed but there were a few Eskimos with ruined harpoons and red faces.

21-Dead After Explosion In Spitsbergen Coal Mine

The New York Times

OSLO, Norway, Nov. 6.—Twenty-one men were killed last night in an explosion in the world's northernmost coal mine, in Spitsbergen. The mine is owned by the Norwegian Government.

The community of about 300 persons at Ny-Aalesund in Spitsbergen was awakened by an explosion that shook the houses. The mine, worked by about 100 men, is 500 feet deep.

The Governor of Spitsbergen, Finn Midboe, said today that 10 men were found dead on the surface and had probably been outside the mine in one of the canteens when the explosion occurred. Eleven members of their shift team were missing, presumed dead. The entrance to the mine was blocked by the blast and hope of finding the missing men alive was abandoned tonight.

Spitsbergen is a group of islands in the Arctic Ocean 400 miles north of Norway.

Alaska Maneuver Slated

WASHINGTON, Dec. 6 (AP)—Canadian and United States military forces will join in a cold-weather maneuver in Alaska in February, it was announced today. The maneuver, called Exercise Timber Line, will involve 8,000 men.

Measles Kills 49 in Greenland

COPENHAGEN, Denmark, Oct. 13 (AP) — More than a third of Greenland's population has come down with measles in an epidemic that began in April, an official report said today.

The report attributed 49 deaths to the disease. Thule, site of a big United States Air Force base, was one of three settlements not affected.

Soviet Finds Gas in Arctic

MOSCOW, Nov. 4 (UPI)—The Soviet press agency Tass reported today that Russian geologists had found a natural gas deposit, believed to be the first within the Arctic Circle, in the Tyumen region.

FIRST INTERNATIONAL ANTARCTIC EXHIBITION

OCTOBER 28, 1962
TO MAY 1, 1963



THE MARINERS MUSEUM
NEWPORT NEWS, VIRGINIA

Byrd Antarctic Vessel To Become a Museum

DARTMOUTH, N. S., Dec. 1 (AP)—The Bear, an 89-year-old wooden auxiliary sailing ship that took Adm. Richard E. Byrd to the antarctic in 1933 and 1939, is to be restored and towed to Philadelphia for conversion to a restaurant and maritime museum.

The ship will be drydocked here for a 10-day examination and then towed to Lunenburg, N. S., for rerigging as a barkentine, a type of three-masted vessel. The ship was originally rigged as a barkentine but was altered by the late Admiral Byrd.

The rigging job will take about two months. The ship will be towed to Philadelphia.

Exhibits on Antarctic Draw Many Diplomats

NEWPORT NEWS—Diplomats from nine foreign countries attended the formal opening of the first International Antarctic Exhibition in the Mariners Museum.

Rear Adm. George J. Dufek, USN (retired), director of the museum, opened the exhibition and hailed international cooperation in Antarctic scientific research.

Adm. Dufek, a navigator for Adm. Richard E. Byrd on a South Pole expedition and commander of the Navy task force which built seven American stations in Antarctica from 1954 to 1959, said:

"Antarctica is one of three worlds with which civilized man has come to terms. The other two are the depths of the ocean and space. They all have one thing in common — man as a natural inhabitant is absent. But if humanity wants to go on living it must learn to live in peace. In Antarctica we might be able to lay the foundation for peaceful collaboration."

The three Communist bloc nations — Russia, Czechoslovakia and Poland — which signed the

Antarctic Treaty in 1959 were not represented at the opening. Complications of the Cuban crisis and the 90-mile radius from Washington in which Soviet diplomats are ordinarily permitted to travel were blamed for their absence.

An exhibit was prepared to show scientific work on Antarctica by the three nations. It features their publications. Russia recently has promised to send an exhibition to be included.

The exhibition, to be shown for six months, occupies two museum galleries. Maps, color photographs, tools and trace exploration and investigation of Antarctica from its discovery.

Exhibits were furnished by Argentina, Australia, Belgium, Chile, France, Great Britain, Japan, New Zealand, Norway, South Africa and Sweden and by various American agencies and firms which have worked in Antarctica.

Shelf.

The fossils, among the youngest to be found in the eastern part of the huge ice-covered continent, were discovered by a New Zealand field expedition in the last Antarctic summer.

Two expeditions from the New Zealand Department of Scientific and Industrial Research found metamorphic rocks and bits of granite similar to those in the fiordland area on New Zealand's South Island, a series of continental fresh-water sediments containing coal seams and plant beds, and some finely bedded shales indicating a cold climate and the presence of



Cachet For World's Antarctic Exhibition

The Mariners Museum and the Peninsula Stamp Club, Newport News, Va. issued an attractive cacheted cover to mark the October 28 opening of the First International Antarctic Exhibition there on that date.

According to Rear Adm. George J. Dufek, director of the museum, the event "recognizes the achievements of the men from all the nations that have conducted scientific expeditions to the Antarctic". A large amount of memorabilia of past expeditions to that area is being displayed until May 1.

The cachets are engraved. Franking is with the recent Arctic Exploration commem, affording a combination of interest especially to IGY and Polar philatelists. Covers are 20c each, plus a large stamped addressed return envelope with each order, from The Mariners Museum, Newport News, Va.

nearby glaciers about 300,000-500 years ago.

Also found were a number of impressions of triassic plants in loose boulders—an indication that the Antarctic 250,000,000 years ago was very much warmer than it is today, the scientists say.

Texas Scientist to Study On Soviet Antarctic Ship

COLLEGE STATION, Tex., Nov. 23 (AP)—A Texas A.&M. College oceanographer-meteorologist will board a Soviet oceanographic ship in February to conduct thermal radiation temperature research in the Antarctic.

The scientist, Dr. Guy A. Franceschini, is the first American scientist to be selected to sail with Soviet oceanographers aboard the research vessel Ob, the college said today.

Dr. Franceschini will study the exchange of energy between the sea and air where the cold waters of the Antarctic meet the warm waters from the other oceans.

Antarctic Series Designs Detailed

The Annigoni portrait of Queen Elizabeth will be used on the stamps in the forthcoming series of regular postage stamps for the British Antarctic Territory, according to the Philatelic Traders Society of London.

The designs for the stamps are identified as the work of Michael Goaman and the adhesives are being produced by Bradbury, Wilkinson & Co.

A variety of appropriate subjects have been selected for the stamps, with the high value, a £1 denomination, featuring a map of the British Antarctic Territory.

Denominations and subjects of the other stamps are: ½ pence, Motor Vessel Kista Dan; 1 penny, Man Hauling a Sled; 1½ pence, Muskeg, a snow vehicle; 2 pence, Skiing; 2½ pence, Beaver, vehicle used in Antarctic operations; 3 pence, Motor Vessel John Biscoe; 4 pence, Camp Scene; 6 pence, H.M.S. Protector; 9 pence, Sledging; 1 shilling, Otter, a type of Antarctic operations plane; 2 shillings, Huskies; 2 shillings 6 pence, Helicopter; 5 shillings, Snowcat and 10 shillings, R. R. S. Shackleton.

British Antarctic Territory—A special exhibition of stamps and background material has been prepared by the Smithsonian Institutions Division of Philately and Postal History with the cooperation of the Crown Agents. The display features the new definitive issue to be released February 1; thus, this is an advance showing.

Interested collectors will find the display in the Division's exhibition area in the Arts and Industries Building.

Antarctic Preserve

Explorers can move freely over Antarctica without regard to boundaries. On Dec. 1, 1959, all nations with claims to Antarctica territory signed a treaty declaring the area south of 60 degrees south latitude an international preserve for scientific research.

250,000,000 YEARS CHANGE ANTARCTICA

WELLINGTON, New Zealand (Reuters)—New Zealand scientists believe that the eastern section of Antarctica had a warm, wet climate and was covered with luxuriant rain forests 250,000,000 years ago.

They have reached this conclusion after studying impressions of ferns and conifers found in loose boulders on the polar plateau above the Ross Ice

CHARLES STRONG, EXPLORER, DEAD

Author of Boys' Books Was
55—Studied the Arctic

The New York Times

MANHASSET, L. I., Oct. 11—Charles S. Strong, author, editor, traveler and explorer, died yesterday of a heart attack in Hempstead. He was 55 years old and lived at 17 Vanderbilt Road.

Mr. Strong was chiefly interested in the Arctic region and did publicity in North Europe emphasizing the trans-polar flights and scientific expeditions of Roald Amundsen, Lincoln Ellsworth, Umberto Nobile and Adm. Richard E. Byrd.

He was in one of the search parties for Amundsen when the explorer was lost in the Arctic in 1928 while seeking survivors of the Nobile expedition.

Mr. Strong did aviation pioneering in the Arctic, Far East, Africa and South America. He flew with bush pilots through Canada, and lived in fishing and lumber camps, at trading posts and with the Indians of West Canada.

In 1928 he spent the winter in the Arctic with a tribe of nomad Lapps. In 1957 he camped on pack ice in the Arctic Ocean near Spitsbergen as an official observer for the Arctic Institute, in connection with the International Geophysical Year.

Mr. Strong's adventures in the north and other lands were the bases for many boys' books that he wrote under his own name and a number of pen names.

He also lectured extensively on Scandinavia and the Arctic at schools and educational institutions.

In World War II Mr. Strong assisted the Norwegian Government in exile in English-language publicity and in fund-raising.

He was born in Brooklyn, where he studied at Pace Institute. He also attended Royal Frederick University in Oslo, Norway. Mr. Strong became interested in Scandinavia through working for a foreign news agency and later was president of the Scandinavian-American News Bureau in New York and Oslo.

He was a former president of the Manhasset Lakeville Fire Department.

Mr. Strong's books include: "Snow King, Herd Dog of Lapland," "Seal Hunters," "We Were There With Byrd at the South Pole," "The Story of American Sailing Ships" and "Roll the Red Wagons."

Surviving are his widow, the former Ida May Brower; a son, Charles R.; a daughter, Miss Ida L.; four brothers and a sister.

Dr. Carl R. Eklund Dead at 53; Was a Noted Antarctic Explorer

The New York Times

WASHINGTON, Nov. 4—Dr. Carl R. Eklund, Antarctic explorer and chief of polar and Arctic research for the Army, died early today in Philadelphia of a heart attack. He was 53 years old.

Dr. Eklund had lectured yesterday at the Philadelphia Museum of Natural Science.

He had received international recognition for his work as an explorer and scientist. Recently Dr. Eklund had returned from Paris, where he was the official representative of the committee on polar research of the United States National Academy of Science.

At this Paris scientific meeting he delivered a paper on Antarctic seals and birds. He was a leading authority on the South Polar skua, a large bird of the Antarctic. The skua was the subject of his Ph. D. thesis at the University of Maryland in 1959.

Dr. Eklund was a native of Tomahawk, Wis. During Tomahawk's diamond jubilee celebration last year, he showed his Antarctic motion pictures and was given a key to the city as an "honored son."

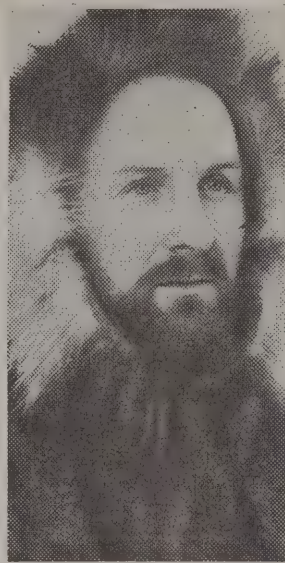
As a member of the Academy of Sciences committee on polar research, he advised the Government on the Antarctic projects carried out during and since the International Geophysical Year. He also enlisted the aid of Russian and other scientists in a bird-banding project to trace the migration of Antarctic birds.

Dr. Eklund was a member of Adm. Richard E. Byrd's 1939-41 Antarctic expedition. Then he and Finn Ronne made one of history's major Antarctic treks, traveling 1,264 miles by dogsled in 84 days, charting and mapping more than 350 miles of the Antarctic coast.

The pair discovered a group of islands in King George VI Sound, which have since been named the Eklund Islands. He and Mr. Ronne also determined that Alexander I land was and island, linked to the mainland only by floating ice in a through more than three times the length of Long Island Sound.

In one incident of the trek, Capt. (now Admiral) Richard B. Black headed a search party when Mr. Ronne and Dr. Eklund were feared lost. He saw a dark object on a ridge ahead. It seemed to move, but he thought little of it. Then, as Captain Black later described it:

"From long habit I put up my binoculars, and the object was moving and was plainly outlined as a dog team and two men. I have rarely experienced such feeling of joy. Our search, with all the uncertainty, the possibility of passing without contact, was ended. I shouted to



Dr. Carl R. Eklund

the rest, and there was a spontaneous cheer at what they saw now clearly visible on the crest of the rise and less than mile away.

"We headed at full speed for them, even the dogs catching the spirit of the happy occasion, and we were soon pumping hands and giving loud congratulations.

"Both Ronne and Eklund looked badly burned and very tired, but they certainly did not look to be in need of rescue. Eighty-four days and 1,264 miles of walking had made them as hard and tough as wolves."

Dr. Eklund began 29 years of Government service as a forestry foreman in Virginia's Shenandoah National Park, after graduating from Carleton College, Northfield, Minn., where he was an all-Midwest Conference football end.

He was research biologist and ornithologist for the Fish and Wildlife Service in Corvallis, Ore.; Seney, Mich.; Minneapolis, Portland, Chicago and Washington and in 1955-56 was Assistant Regional Director of the Fish and Wildlife Service at Atlanta.

During World War II he was a major in the Arctic section of the Arctic-Desert-Tropic information center of the Army Air Forces and was assigned to missions in Greenland and Canada.

In 1957, as a scientist of the National Research Council, Dr. Eklund participated in Operation Deepfreeze, and was leader of research at Antarctica's Wilkes Station.

Dr. Eklund was the author of many learned papers on his specialties. One of these pro-

DR. WEXLER DIES, A METEOROLOGIST

Weather Bureau's Director
of Research Since 1955

The New York Times

WOODS HOLE, Mass., Aug. 11—Dr. Harry Wexler, Director of Research of the United States Weather Bureau, died of a heart attack Saturday, while on vacation here. He was 51 years old and lived in Falls Church, Va.

Dr. Wexler had been with the Weather Bureau continuously since 1934. He held citations for distinguished service from the Air Force, Navy, Department of Commerce and National Civil Service League.

From 1955 through 1958, along with his duties at the bureau, he was chief scientist for the United States expedition to the Antarctic for the International Geophysical Year.

He became chief of the Weather Bureau's Science Services Division in 1946 and Director of Research in 1955. During that time, he also served on special Government panels on the biological effects of atomic radiation, polar research, the meteorological aspects of satellites and on the National Academy of Science's Space Science Board.

He was the answer to how the Emperor penguin was able to incubate eggs in the Antarctic winter at temperatures as low as 79 degrees below zero.

To discover it, Dr. Eklund developed a technique for inserting a telemetering device inside the eggs. With this he was able to determine that the average temperature of the incubating eggs of 92.7 degrees was only 11.1 degrees lower than the body temperature of the bird that was incubating them—despite the great cold.

He was a member of the Explorers Club, and was founder and first president of the Antarctic Society.

Dr. Eklund, who made his home here, is survived by his widow, Harriet; two daughters, Linda and Signe; two brothers, Laurance C., Washington correspondent of The Milwaukee Journal, and Oscar A., a Veterans Administration construction engineer.

Lt. Cmdr. Corning

BOSTON (UPI).

Lt. Comdr. Charles V. Corning, 47, commander of the first ship to navigate the Northwest Passage, died July 12 of cancer. He commanded the Coast Guard Cutter Spar when she made the hazardous voyage in 1957.

Vilhjalmur Stefansson, 82, Dies; Led Many Expeditions in Arctic

Scholar Was Among Last of Dog-Team Explorers — Predicted Polar Flights

The New York Times.

HANOVER, N. H., Aug. 26— Vilhjalmur Stefansson, one of the last of the dog-team explorers of the Arctic, died here early this morning of a stroke suffered last Monday. His age was 82.

Mr. Stefansson had written twenty-four books and at least 400 articles about the Far North and its people, including blond Eskimos. He was one of the first to predict travel over the polar ice by airplane and under it by submarine.

The explorer was stricken at a dinner here honoring an old friend, Eske Brun, chief of Denmark's Ministry for Greenland. Mr. Brun was visiting here and Mr. Stefansson was receiving congratulations on the first draft of his autobiography, which he had completed the week before.

He was taken to Mary Hitchcock Memorial Hospital after his collapse and remained in a virtual coma until his death.

Mr. Stefansson had been Arctic consultant at Dartmouth College and curator of the classic Stefansson Collection of polar literature since 1947.

He is survived by his widow, the former Evelyn Schwartz Baird, who had been his secretary and research assistant. She is the librarian of the Stefansson Collection, and has written extensively about the Far North.

He also leaves a sister, Mrs. Rosa Josephson of Mozart, Sask.

Considered Top Authority

After more than half a century of study and exploration of the Arctic, Mr. Stefansson at his death was perhaps the greatest authority in the world on that region.

He had, however, never reached the North Pole.

From time to time, persons who were familiar with his explorations and his scholarship, but who were fuzzy on details, would ask him if he had traveled to the Pole.

"No," he would reply with a touch of the whimsy he en-

joyed, "I am a scientist, not a tourist."

The explorer was called "Stef" by his intimates, who sometimes stumbled over his first name, usually pronounced VIL-hal-mur.

He was 5 feet 8 inches tall, broad-shouldered and compact in build. His eyes were blue, and in his earlier years his skin was ruddy and his eyes shadowed by heavy blond eyebrows. His hair had been brown, curly and bushy.

Mr. Stefansson began his northern explorations in 1904, and in the next fifteen years spent ten winters and thirteen summers in the Far North. In 1919 he retired from active exploration and devoted his energies to studying, writing and lecturing about the Arctic and assembling the Stefansson Collection, which some authorities have described as the best and largest of its kind in the western world.

He had the pleasure of seeing one of his predictions come true: that the Arctic would be breached by regular air travel and by submarines.

But he had suffered his stroke when President Kennedy had announced last Wednesday that the two nuclear-powered submarines, Skate and Seadragon, from Connecticut and Hawaii, respectively, had made a "historic rendezvous" at the North Pole.

Earlier, however, friends pleased with Mr. Stefansson's predictions had congratulated him as a visionary. The explorer, with another of his whimsical touches, said:

"If you predict something six months ahead you are a man of vision; but if you predict something twenty years ahead, you are a visionary."

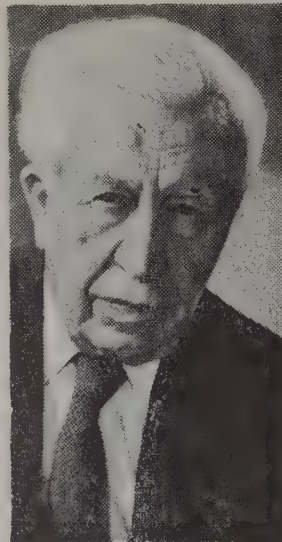
He was born at Arnes, Man., on Nov. 3, 1879, of Icelandic parents. He studied at the State Universities of North Dakota and Iowa and attended the Harvard Divinity School in 1903 and 1904 and the Harvard Graduate School the next two years.

Mr. Stefansson at various times in his life was a school teacher, insurance agent, organizer of secret society lodges, cowboy, public lecturer, reporter and city editor.

While an assistant instructor in anthropology at Harvard, he conceived the idea of going to the Arctic on scientific investigation, and made his first trip to Iceland in 1904.

He made another trip for Harvard in the interests of archaeology the next year, and spent part of 1906 and 1907 with an ethnological expedition to the mouth of the Mackenzie River and Northern Alaska.

Mr. Stefansson's first extended trip to the Arctic was made in company of an old scientific friend of University of



United Press International

Vilhjalmur Stefansson

Iowa days, Dr. Rudolph M. Anderson. The party remained in the Arctic four years, from 1908 to 1912, and it was during this trip that Mr. Stefansson found blond Eskimos on both sides of the Dolphin and Union Straits, presumably descendants of Vikings.

The Eskimo had never seen a white man and had never been seen by a white man. It was partly to clear up the origin of the blond Eskimo and also to find whether there was land to the north of Prince Patrick Island that Mr. Stefansson, soon after returning to civilization in 1912, conceived the most ambitious scientific trip to the Far North undertaken up to that time.

Financed by the Canadian Government, Mr. Stefansson's expedition left British Columbia on the steamship Karluk in June, 1913, more than a year before World War I.

During this trip Mr. Stefansson put undiscovered islands on the map. The first of these was discovered on June 15, 1913. Surveying this land to the eastward for 100 miles, Mr. Stefansson made observations at a height of 2,000 feet and estimated that the newly discovered land extended for at least 150 miles.

Returning to the base camp at Cape Kellett on Banks Land and after making known his discovery to the outside world, Mr. Stefansson again pushed his way into the unknown North.

The purposes of the Stefansson trip of 1913 were as follows:

¶To learn whether a polar continent exists.

¶To map the islands already discovered east of the Maczenzie River.

¶To make a collection of the Arctic flora and fauna.

¶To survey channels among the islands in the hope of establishing trade routes.

¶To make a geological survey of the islands, which were believed to contain copper and other minerals and to study the blond Eskimo of Coronation Gulf.

At one time the explorer and his companions subsisted on a diet of oil, soaking it up with their caribou-made garments. After several days they met an Eskimo with food that saved their lives.

During his two long trips Mr. Stefansson was many times given up for lost and had innumerable narrow escapes from death. He was one of the few Arctic explorers who attempted to live in the North in the same manner as the Eskimo, subsisting only on what he could fish from the streams or kill with his rifle.

He was prepared for a three weeks' stay on the ice twenty miles from the mouth of the Colville River, where he and five men landed to hunt. While on shore the floe in which, the

Karluk was imbedded was torn away by a heavy gale from the surrounding ice and the ship began to drift. Finding that the Karluk had drifted beyond his reach, Mr. Stefansson, accompanied by two companions, pressed toward Prince Patrick Island.

For this trip of 700 miles the entire resources of the three men consisted of one sled and a dog team. They had 1,300 pounds of supplies and baggage, two rifles and 300 rounds of ammunition. The hardihood of the three was demonstrated in the daring trip they made after the drifting away of the Karluk. They lived like their Eskimo neighbors, and some months later reached their goal in safety.

In the meantime the Karluk drifted hopelessly for four months and was smashed in the ice off Herald Island on Jan. 11, 1914. The supplies were removed to the ice, and the company on the vessel was divided into two parties. Eleven members lost their lives and the others succeeded in reaching Herald Island and Wrangel Island.

Captain Bartlett and an Eskimo made a dash for the mainland and the following September brought a vessel, the King and Wing, to the rescue of the eight men left behind.

In March, 1914, Mr. Stefansson and two companions set out over the ice with dogs and made their way due north, discovering a large island or continent northwest of Prince Patrick Island and making a safe return to Banks Island. He passed the summers of 1915 and 1916 exploring the new island, having established a communication in 1915 with the Anderson party through the power boat Polar Bear, which had gone to Banks Land with supplies.

In a letter to Rear Admiral Robert E. Peary from Banks Island, dated Jan. 11, 1916, Mr. Stefansson wrote that if he was not heard from in November,

1917, a ship or snips should be sent north from the Atlantic to look for him in the spring of 1918.

In a message to The New York Times, dated Herschell Island, Nov. 10, 1917, Mr. Stefansson said he had given up in September his plan to return to civilization by way of the Northeast Passage and the Atlantic Ocean. So he started westward toward Point Barrow, the northernmost point of Alaska, intending presumably to reach the Pacific in his own craft. But a mishap at Barter Island, which is west of Herschell Island and about one-fourth the distance to Point Barrow, delayed him seventeen days and made exit by the Northwest Passage impossible.

No message was received from Mr. Stefansson until the next February, when one was forwarded from Herschell Island. In it he announced plans to remain in the Arctic until the summer of 1919, but he fell ill with typhoid in March, 1918, and was forced to return to Alaska, thus ending the adventurous third trip.

After that year, Mr. Stefansson made no trip of any great duration. In 1921 he sent a colonizing expedition to Wrangel Island that was to have disastrous consequences.

For many years Mr. Stefansson urged the great importance of Wrangel Island as an air base for Arctic flying, and he tried to impress upon the Canadian and British Governments the fact that the island really belonged to the empire, and should be colonized.

Both in Canada and London Mr. Stefansson's proposals were heard with interest, but no steps were taken toward materializing them. The United States and Russia likewise hold what each considers a valid claim to the island. Mr. Stefansson decided to take matters into his own hands, and in September, 1921, he fitted out a ship, and sent four Americans and an Eskimo seamstress to live on the island. Four years later a rescue expedition found the Eskimo woman alive; but the men had met their death.

Mr. Stefansson came in for much criticism on the score that he had not equipped the expedition properly. These charges he refuted in a book called "The Adventure of Wrangel Island," written in 1925.

Despite the tragic ending of his hopes for Wrangel Island, Mr. Stefansson continued his insistence on the value of that territory, interest in which was revived in the fall of 1926, when a Russian colony was successfully established there.

One of Mr. Stefansson's great contributions as an explorer was of an iconoclastic nature. He destroyed more popular myths in regard to life in the Arctic than any other explorer, and seemed to take great delight in doing so.

Mr. Stefansson's books in-

HAROLD JUNE, 67, EXPLORER, DEAD

Member of First Expeditions
by Byrd to South Pole

The New York Times

HARTFORD, Nov. 22 —

Harold I. June, who made the first flight over the South Pole with the late Rear Adm. Richard E. Byrd and Bernt Balchen in 1929, died today in Hartford Hospital. He was 67 years old and lived in Windsor, Conn.

Mr. June was also a member of the second Byrd expeditions to Antarctica in 1933-35. He was second pilot to Mr. Balchen and the radio mechanic on the first flight. Another member of that flight was Capt. Ashley McKinley.

On the second expedition Mr. June was chief pilot and transportation officer, making several exploratory trips through the Antarctica by tractor and sled as well as by plane.

When he came home from the second expedition in 1935 he said "never again." But the next year he was considered to head his own expedition. But it never materialized.

Mr. June was one of the early aviators who flew "from the seat of their pants." With little formal technical education, he became one of the top fliers

cluded "My Life With the Eskimo," 1913; "The Friendly Arctic," 1922; "Northward Course of Empire," 1922; Hunters of the Great North," 1922, and "The Adventure of Wrangel Island."

He also wrote "The Arctic in Fact and Fable," 1945; "Not by Bread Alone," 1946; "Northwest to Fortune," 1958, and "Cancer: Disease of Civilization," 1960. He edited "Great Adventures and Explorations" in 1947.

Mr. Stefansson placed great emphasis on scholarship.

One admirer of his scholarship called him the first of the scholars in a field of hairy-chested explorers seeking fame and adventure.

His books and articles encompassed many fields, including anthropology, geopolitics, economics, linguistics, medicine, ethnography and religion.

His dominant themes were that the Far North, not the crouching monster pictured by some others, was a friendly, habitable place with tremendous



Harold June

1929

and aviation technicians of his day. He was a Navy test pilot between the two Byrd expeditions.

For his work with the two Byrd expeditions, Mr. June was awarded the Distinguished Flying Cross and two special medals authorized by Congress for expedition leaders. A peak in the Antarctica bears his name.

Mr. June was born in Stamford, Conn., on Feb. 12, 1895, where he attended grade and high school.

He was divorced from his first wife in 1936. Surviving are his widow, the former Christine Muller, and a daughter, Marguerite.

Thomas C. T. Buckley, 53, Member of Byrd Expedition

GENESEO, N. Y., Nov. 3 (AP)—Thomas C. T. Buckley, who was a member of the expedition party on Adm. Richard E. Byrd's second trip to Antarctica, died today, apparently of a heart attack, while horseback riding during a hunt here. He was 53 years old.

Mr. Buckley was a member of the Harvard University crew that competed in the Henley Regatta in England in 1931. A native of New York, he received his B. A. and M. A. degrees at Harvard. He was a vice president of the Lincoln-Rochester Trust Company in Rochester, and lived here.

Mr. Buckley drove a dog team during Admiral Byrd's 1934-35 expedition.

He is survived by his widow, a son, two daughters and two brothers.

CAPT. W. J. CONLEY JR.

Oct. 22

Capt. William J. Conley Jr. of the Coast Guard died Thursday of injuries received in a fall at his home in Seattle. He was 52 years old.

Captain Conley had extensive duty in the Arctic and Antarctic, commanding the icebreaker Westwind on three recent summer missions to the Arctic and a winter mission in 1957-58 to support American scientific efforts in Antarctica.

For the last three years, he had been chief of merchant marine safety for the 13th Coast Guard District.

He leaves his wife, Annette, and two children, Mrs. James Culbreth and William J. Conley 3d.

untapped resources, and that it would one day become a global crossroads.

In the midst of his writing, he started the Stefansson Collection with 300 books given to him by the American Geographical Society of New York.

Today the collection contains 25,000 bound volumes and some 45,000 manuscripts, pamphlets and other items. All were purchased from him by Dartmouth College in 1953.

In his visionary vein, Mr. Stefansson predicted in 1922 that air traffic between this country and the Euro-Asian land mass would lead over the North Pole. Regular trans-polar air service was inaugurated in 1952.

Nine years earlier he had envisioned the day when submarines would travel under the Arctic icepack.

He discussed this possibility with Capt. Hubert L. Wilkins, later Sir Hubert Wilkins, in 1913, while they camped on an ice floe during a sledge journey away from their ship, the Karluk.

Mr. Stefansson said the submarine would be a reliable and

valuable research base because it could surface in open lagoons in the Polar ice pack. Sir Hubert attempted to reach the Pole by submarine eighteen years later, only to be forced back by mechanical failures.

Because of his knowledge of the Arctic, his scholarship and his belief in the future of air travel there, Mr. Stefansson became an adviser from 1932 to 1945 to Pan American World Airways.

Mr. Stefansson's studies also proved of special value to the United States Government during World War II, when his Arctic Manual, originally prepared for the Air Corps in 1935, was reprinted for more general circulation.

In a reflective mood, the explorer once wrote:

"After years of friendly dealing with the ice seeking my food upon its surface or at its margin, walking on it by day and camping upon it comfortably at night, I am as much at ease on its floating cakes as the Swiss are among the Alps that horrified Hannibal's generals."

A Slippery Place and Home of the Wingless Mosquito

ANTARCTICA: Land of Frozen Time. By Roger A. Caras. Illustrated. 209 pp. Philadelphia and New York: Chilton Books. \$6.

OUR WORLD IN ANTARCTICA. By Lieut. (j.g.) A. Denis Clift, U.S.N.R. Illustrated. 160 pp. Chicago and New York: Rand McNally & Co. \$7.50.

By WILLIAM R. ANDERSON

If space-exploring man should discover a planet with breathable atmosphere, earth-like gravity and abundant water, he would consider himself astoundingly fortunate. Add to this a solid place to stand and freedom from harmful bacteria and toxic substances, and his most optimistic expectations will have been exceeded. Yet the difficulties he may still encounter are exemplified by the experience of man on the great continent of Antarctica on our own planet. What a difference a relatively few degrees of temperature can make! For compared to the difference between the absolute zero of space and the temperature of a sun, the 100-degree difference in temperature between the natural world of man and the interior of the Antarctic continent is small indeed.

Roger Caras has written of a world marked by this difference—a world of ice. Ice dominates his description, as it must, dominate the work and thoughts of anyone concerned with the Antarctic. Seven million cubic miles of ice crush down on this bleak land of almost 6,000,000 square miles. A staggering two-mile thickness of ice blankets the high polar plateau.

Yet Mr. Caras treats of more than ice, difficult as it is to escape its overpowering fascination. He traces man in Antarctica from the early sealers through the poignant tragedy of the Scott expedition to the nuclear reactor at McMurdo Sound. He catalogues the teeming sea life off the edge of the continent, and the birds and animals on the continental fringe which owe their existence to the sea. The vast reaches of the interior are almost devoid of life, the most significant animal being, apparently, a wingless mosquito.

THE author obviously assumes that his reader knows little about Antarctica. His goal, therefore, is to initiate the non-expert. With this ambitious scheme Mr. Caras might well have created the tedium of an

almanac or the superficiality of a travelogue. He has skillfully avoided both through a graphic and entertaining style and the use of factual appendices. Within the latter are included the full text of the twelve-nation Antarctic Treaty, a tabulation of Antarctic expeditions and a bibliography. The reference value of the book is greatly enhanced by its exhaustive index.

A. Denis Clift has focused his attention on the tremendous scientific effort now taking place in the Antarctic under the auspices of the National Science Foundation, Operation Deep Freeze. This effort, representing an indefinite continuation of the Antarctic research program begun in the International Geophysical Year, encompasses the

work of a dazzling array of the scientific disciplines. It is encouraging to read that the end of the I.G.Y. did not signal the termination of the pooling of knowledge among the participating nations. One may hope that the Antarctica experience may serve as a model for future cooperation in other fields.

Mr. Clift, a member of the staff of the Navy task force supporting the project, transports us through photographs into the lives of the men engaged in combat with a continent. An extensive and well-written text complements the pictorial coverage. The latter, as far as it goes, is splendid. In the perhaps inevitable emphasis on the men and machines of this great endeavor, however,

sight is often lost of the majesty, loneliness and basic lifelessness of Antarctica itself, the object of the endeavor. A picture of bustling activity emerges, which tends to obscure the fact that the small enclaves described are but tiny toeholds on a vast and alien land.

If, however, a distortion indeed, exists, the reader needs only to turn back, occasionally, to an unbelievably striking panorama of the mountains of Victoria Land near the outset of the book, and perspective is abruptly regained. The text, fortunately, often has a sweep that surpasses the pictures; and, in any event, the prodigious effort needed to maintain the Antarctic toehold is in itself a worthy and absorbing subject.

Legacy of an Arctic Explorer

PETER FREUCHEN'S MEN OF THE FROZEN NORTH. Edited by Dagmar Freuchen. Illustrated. 315 pp. Cleveland and New York: The World Publishing Company. \$6.

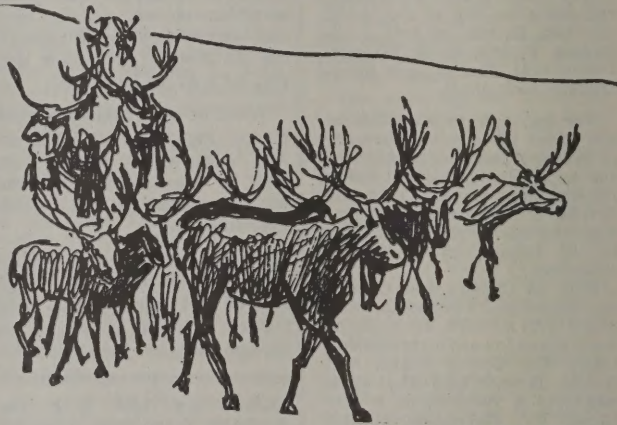
By JIM LOTZ

DURING his lifetime, the fame of Peter Freuchen rested securely on his considerable achievements as an Arctic explorer and traveler, his colorful personality and his ability to convey in words, spoken and written, something of the gusto and vigor with which he lived. A man who had been everywhere and done everything, Freuchen picked up, in the course of his wanderings, an amazing collection of stories that he told and retold with great zest and pungency. To many people, Peter Freuchen exemplified the North—open, vigorous, stimulating and a little larger than life.

Since Freuchen's death in 1957, a number of books bearing his name have appeared. While the standard of these books has varied, they have, in the main, reflected nothing but credit on this unusual northerner. In the latest Peter Freuchen book, Dagmar Freuchen, his widow, has scraped the bottom of the barrel, and put together about a dozen stories and a few bits and pieces of factual material.

The result is a monumentally dull book, totally lacking the characteristics of previous Freuchen books. The stories have none of the liveliness, the humanity, the humor or the intimate knowledge of the North that these other volumes had.

They could have been written by anyone, and the more factual parts of the book contain little



Drawing by Dagmar Freuchen for "Peter Freuchen's Men of the Frozen North."

that cannot be found in an encyclopedia.

The stories parody rather than portray the men, and the women, of "the frozen north." "Moba and Charley Jim" tries to prove that, no matter how highly educated an Indian becomes, he—or she, in this case—will always revert to type, and take off for the bush at the first opportunity. "The Pangs of Jealousy," the tale of "courageous, unconquerable Mabel" and the letters she kept "tied together with a rose colored ribbon," could have come straight out of any woman's magazine of the nineteenth century. The best episode in the book, an uproarious account of a Christmas dinner with a drunken trader on the shores of Hudson Bay, first appeared in a very different version in Peter Freuchen's autobiography, "Vagrant Viking."

Two pieces on Greenland, written by Peter Freuchen before, during and after World War II, have been included for

no other reason, it seems, than to pad out the book. A few notes have been added by the editor in an attempt to bring this material up to date, but repetition, vagueness and an absence of precise data and precise dates will muddle any reader seeking a clear understanding of recent economic progress and other developments in Greenland.

It's all very sad, this attempt to capitalize on Peter Freuchen's name and fame. Recently another "Peter Freuchen" book had to be withdrawn; one third of it had been taken verbatim from the published work of a distinguished English geographer. Peter Freuchen's reputation is secure. Before it begins to suffer too much, let us hope his literary executors will have the good sense, and the good taste, to leave it, and his name, in peace.

Mr. Lotz is a research officer with the Canadian Department of Northern Affairs.

Captain Anderson, now retired from the Navy, was the Commanding Officer of the nuclear submarine Nautilus on her historic first under-ice transit of the North Pole.

Polar Projection

THE POLES. By Willy Ley and the Editors of Life Illustrated. 192 pp. New York: Time Inc. \$3.95

By JIM LOTZ

WHEN is a book not a book? This curious question arises after the first casual glance through "The Poles," the latest in Life's Nature Library series. Jammed between the covers of this publication is a varied collection of odds and ends of information, and a superb set of photographs on the northern and southern ends of the earth.

The book deals not only with the North and South Poles, but spills over somewhat untidily into the tundra and the sub-Arctic regions. The treatment of all these areas, sometimes in the same chapter, may well confuse the general reader for whom this publication is too obviously designed. Inevitably, the attempt to cram so much, into a limited number of pages results in broad, meaningless statements, such as "Navigating through ice is a bit easier in the Antarctic than in the Arctic." Over-simplification, carried to an extreme, leads the author to ascribe the Franklin disaster to "incredible bad luck."

The editors seem to have assembled this book in the belief that one set of people will read the text, and another set look at the photographs. Willy Ley recounts the details of Peary's successful dash to the North Pole on pages 39 to 40; pages 41 to 49 give the picture coverage of the journey, and the accompanying text relates the same story. Repetition occurs again and again. Anyone reading, for the first time, that two-tusked narwhals are rare (page 42) may well be fascinated. When the same fact appears on pages 82 and 103, he will certainly be bored.

The quality of the text varies tremendously. On animals and plants Mr. Ley writes lucidly and well. The chapters on the future of the Arctic and the Antarctic, although somewhat thin and perhaps too visionary, deal adequately with a complex series of problems. The chapters on Polar exploration and "Man at High Latitudes" give a distorted, unbalanced and unreliable summary of these topics. The tone and approach in these parts of the book can be gauged by the statement that Eskimos are "famous for their practices of exchanging or lending wives."

Mr. Lotz is a Northern Research Officer serving with the Canadian Department of Northern Affairs.

Yet the photographs alone make the book worth owning. The photo-editors have shown imagination, taste and daring in assembling one of the best collections of photographs on the Arctic and the Antarctic to appear in book covers. The work of Emil Schulthess, which adorns the front cover, reveals, again and again, the strange

beauty of the Antarctic, and photographs by Fritz Goro and Doug Wilkinson, among others, show the many wonders of the Polar regions.

Some of the shots are of the "once in a lifetime" variety—musk oxen at bay, mirages, penguins tobogganing and fighting, a close-up of a lemming, dogs closing in on a polar bear. Some

photographs, while technically poor, leave striking impressions; an unfocused picture of a huddle of penguins makes them look even more strikingly human than usual, and a great, grainy shot of the edge of the Ross Ice Shelf has an immensely menacing air about it.

"The Poles" is a book to look at, rather than to read.

Cape Codder on the Polar Ice

ARCTIC ODYSSEY: The Life of Rear Admiral Donald B. MacMillan. By Everett S. Allen. Illustrated. 340 pp. New York: Dodd, Mead & Co. \$5.

By TREVOR LLOYD

POLAR exploration has garnered more than its fair share of ballyhoo since the turn of the century. Yet Donald B. MacMillan has stood aside from the sometimes sham glamour and gone on doing the job with a minimum of fanfare. In part this has been a matter of character, and of his upbringing among the expatriate Scots of Cape Cod. It may also have been that MacMillan was an altogether new type of explorer—university trained, a schoolmaster by profession, always keeping a careful eye on the scientific returns likely to accrue from the discomfort, isolation and frequent hazards of expedition life.

MacMillan first went north with Peary on the successful polar expedition of 1908-1909. On Ellesmere Island he was given a dog team and, tenderfoot though he was, told to drive westward to Cape Columbia, the northernmost point in North America. His duty there was the humdrum one of measuring the rise and fall of the tide—which called for meticulous observation of an ice-covered pole set in a hole in the sea ice, and this throughout a month at 40 degrees below zero. The same task took him to the northern tip of Greenland.

In later years MacMillan, the trained anthropologist and skilled naturalist, had many polar "firsts" to his credit. His expedition of 1925 introduced the airplane—and Richard E. Byrd—to the Arctic. A year before he had pioneered the use of short-wave radio for transmissions from northern Greenland, and he was also the first to use snowmobiles for arctic travel.

MacMillan's first independent command had been a canvas canoe in which he explored the Labrador coast single-handed. In 1913 he led the four-year Crocker Land Expedition to the islands of arctic Canada, and incidentally removed from the map the mythical "land" put there by

Peary. In 1921 he was able to launch his own expedition vessel—the renowned schooner Bowdoin, certainly the most compactly efficient polar vessel ever built. Small enough to be maneuverable, tough so as to withstand the pack-ice and gales, yet roomy enough to carry crew and scientists. Today it rests at Mystic, Conn., as a memorial to this pioneer of American arctic science.

MACMILLAN has been more than a renowned explorer. As "Arctic Odyssey" rightly shows he has also been a great humanitarian. With understanding and feeling for the Eskimos that Peary lacked, he went far out of his way both in Greenland and Labrador to aid them. Characteristically his assistance in Labrador came through a school he built for the Moravian missionaries. His admiration for young people also showed up in his taking sometimes callow students aboard Bowdoin for practical schooling in arctic seamanship and science. And he lectured—probably many thousands of times in all parts of the country, carrying his films and photographs, his tales of the high north and his wide knowledge of natural history to generations of school and college students.

Everett S. Allen, a reporter for The Standard-Times in New Bedford, Mass., has written a sympathetic and understanding biography, all the better because the reader detects the subject's own watchful eye for accuracy. It is above all a fair book. There is no backbiting. Few of Peary's companions ever found it possible to be charitable about the controversial explorer, Frederick A. Cook, but nothing written here will revive old bitterness. And MacMillan explains quite simply why Matt Henson, the Negro, accompanied Peary to the Pole. He was the best man for the job.

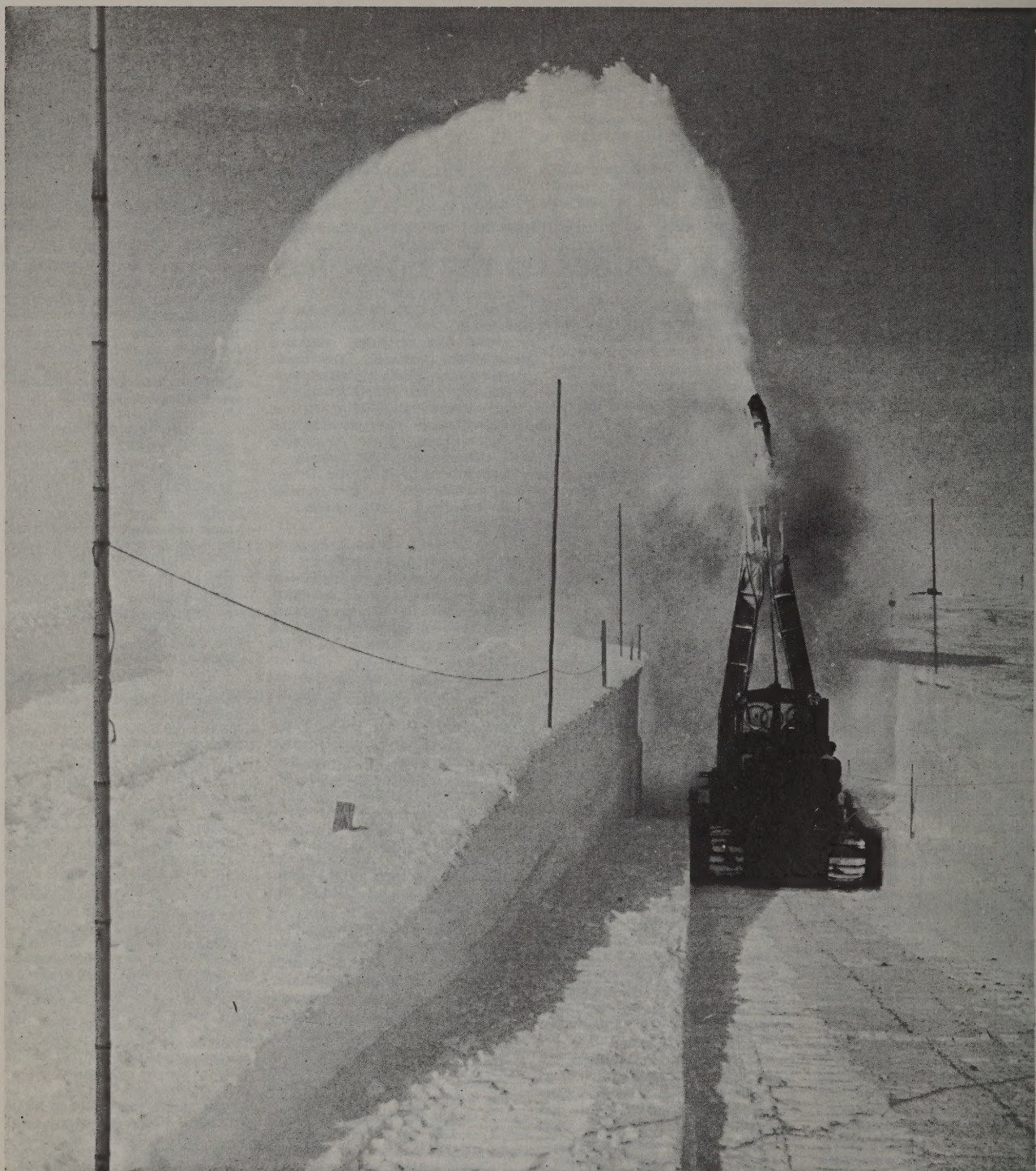
Having watched his calm response to near disaster in pack-

ice and ocean gale, and the twinkling smile with which he welcomed everyone, an acquaintance once remarked, "In some ways Mac's much like an Eskimo." This quietly competent man among American polar explorers, now in his eighty-eighth year, would not want a better tribute.

The Voyages of Henry Hudson, by Eugene Rachlis, illustrated by H. B. Vestal (Random, \$1.95). An excellent biographical account of an English explorer not so well known to young people, this narrative of a courageous and persistent sea voyager into the unknown regions of the New World is in the strong, absorbing, and important World Landmark tradition. The four brave voyages, on which Hudson and his men went in what seem to us pathetically small sailing ships, take us from Elizabethan London up through the North Sea to Novaya Zemla, down the coast of Greenland, across the tempestuous North Atlantic into seas and straits full of treacherous ice to what is now Hudson Bay, down into the Chesapeake and up the Hudson River. Mr. Rachlis skillfully does "take us" on these voyages. From Hudson's boyhood days in the England of Drake and Frobisher, Shakespeare and Ben Jonson, to the cruel end of Hudson's adventurous career when mutiny brought his great discoveries to a close, the story of the search for a northwest passage to China and Japan by way of the North Pole does not lag. And as young readers have learned to expect from the Landmark and World Landmark books, it is vivid, absorbing, authentic, and a genuine contribution to the understanding of people and of history.

Two in the Far North, by Margaret E. Murie (Knopf, \$5.95). There was moose steak for dinner the first night in the Yukon, at Dawson's Arcade Café, when nine-year-old Margaret went from Seattle to Alaska by stern-wheel steamer. Fifty years later she writes of her adventures as she and her husband Olaus, a biologist, trekked the frozen frontiers. Banding geese, drying caribou hides, Mrs. Murie learned to adjust her thinking to the demands of a rigorous life, pursuing her husband's ideal, "All a scientist has is his integrity." Like her brother-in-law Adolph Murie's earlier "A Naturalist in Alaska" (Devine/Adair), this book is enhanced by Olaus Murie's wildlife illustrations.

Mr. Lloyd is Professor of Human Geography at McGill University in Montreal.



Peter plow cuts a trench at Camp Century. The snow is blown into a long dune, later remilled and sprayed back to form a "snowcrete" arch.